Caring for patients with cancer: what helps junior doctors feel prepared?

Judith Cave MRCP

The Department of Oncology and the Academic Centre for Medical Education, Royal Free & University College Medical School

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ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

Abstract

Introduction: Undergraduate medical education aims to prepare students for their first year of work as doctors, but previous research has indicated that the preparedness of newly qualified doctors can be poor. My aims in this thesis were to study junior doctors' preparedness for caring for patients with cancer, and to investigate how such preparedness related to the oncology teaching they received as undergraduates.

Methods: 25 newly qualified doctors and 15 senior doctors participated in semi-structured interviews. The emergent themes formed the basis of a questionnaire for 5143 newly qualified doctors in the UK in May 2005. A group of stakeholders participated in a Delphi consultation concerning the questionnaire results.

Results: 61% of newly qualified doctors had received oncology teaching, but 31% recalled seeing fewer than 10 patients with cancer at medical school. Newly qualified doctors' preparedness for starting work has improved significantly, from 36% feeling prepared in 2001, to 59% in 2005 ($p<0.001$). 40% of respondents felt prepared for looking after patients with cancer. Preparedness was higher for recognising and diagnosing cancer (65%) and for breaking bad news (65%) than for dealing with oncological emergencies (11%) chemo/radiotherapy knowledge (15%), and prescribing syringe drivers (21%). Newly qualified doctors stated that symptom control (71%) and communication skills (41%) were the most important things for medical students to learn about cancer. The strongest predictors of preparedness were relevance of undergraduate teaching to the first year of work ($B=0.26$), and exposure to patients with cancer at medical school ($B=0.12$). Stakeholders identified the need for a core undergraduate cancer curriculum, and greater community involvement in oncology teaching.

Conclusions: Oncology teaching and meeting patients with cancer help to prepare doctors for looking after patients with cancer, but there are worryingly low levels of exposure of medical students to patients with cancer. Oncologists should increase involvement in undergraduate teaching. Teaching should emphasise areas that are relevant to real life as a junior doctor, for example by placing emphasis on symptom control. There should be greater involvement of patients in teaching.

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List of abbreviations

ASME	Association for the Study of Medical Education
BNF	British National Formulary
CAL	Computer Aided Learning
CINAHL	Database of the Literature for Nursing and Allied Health Disciplines
COREC	Central Office for Research Ethics Committees
CRUK	Cancer Research UK
DMR	Duty Medical Registrar
ERIC	Educational Resource Information Centre
ESMO	European Society for Medical Oncology
FY1	Foundation Year One
GKT	Guy's King's and St Thomas' School of Medicine
GMC	General Medical Council
GMP	Graduate Medical Program
GP	General Practitioner
HEFCE	Higher Education Funding Council for England
MMC	Modernising Medical Careers
NHS	National Health Service
OSCE	Objective Structured Clinical Examination
PBL	Problem based learning

PRHO	Pre Registration House Officer
PEC	Postgraduate Education Centre
RCP	Royal College of Physicians
RCT	Randomised controlled trial
RFUCMS	Royal Free & University College Medical School
SCIM	Structured Clinical Instruction Module
SHO	Senior House Officer
SPR	Specialist Registrar
SSM	Special study module
TIMELIT	The International Database for Medical Education
UCL	University College London
UICC	International Union Against Cancer
UK	United Kingdom
WHO	World Health Organisation

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15.4.08

Chapter 1. Should oncology teaching be changed?
Introduction and background

'Students must be properly prepared for their first day as a PRHO'

The General Medical Council, London, 2003

Summary

Cancer is common, and undergraduate medical education plays an important role in preserving the quality of care for patients with cancer and their families. The aim of undergraduate medical education is to prepare medical students for their first year of work as doctors, but previous research has indicated that the preparedness of newly qualified doctors can be poor. My aims in this thesis were to study junior doctors' preparedness for caring for patients with cancer, and to investigate how such preparedness related to the oncology teaching they received as undergraduates.

1.1 Introduction and rationale

1.1.1 The cancer burden

More than 1 in 3 people will develop cancer during their lifetime, and there are more than 1.2 million people alive with a diagnosis of cancer in the UK[1]. The average UK General Practitioner will have 40 patients with a current or past history of cancer on their list (based on a typical average of 2,000 patients per GP)[2]. There is an increasing incidence of cancer in the UK, partly due to ageing of the population. Developments in cancer treatment have also increased the number of survivors either still with, or cured from, their cancer. Many of these survivors have physical or psychological sequelae for which they require care.

Doctors without a specialist interest in cancer will carry out the majority of care for these patients and their families. This is true at many critical points in patients' cancer care pathway; the initial suspicion of cancer, referral, diagnosis, breaking bad news, long term follow-up and palliative care. Doctors need to be trained to consider the effect of a diagnosis of cancer upon medical problems such as vaccinations, depression, back pain, and referral of family members for screening. Patients have a right to expect competent care at all stages in their cancer journey.

1.1.2 Teaching and learning in oncology, and improving patient care

The aim of undergraduate medical education is to prepare students to be doctors, and to equip them with lifelong skills to allow them to care competently for all patients[3]. Doctors without a specialist interest in cancer may not have many opportunities to receive postgraduate teaching about oncology, and this places great emphasis on their undergraduate education with respect to cancer. Specialists in oncology* should ensure that undergraduate medical education is fit for two purposes: for preparing students for their first year of work as doctors looking after patients with cancer, and for giving all

* Meaning the oncology community in the widest sense: medical and surgical doctors who specialise in cancer care; palliative care specialists; pathologists; clinical nurse specialists; and health professionals allied to medicine.

doctors an adequate grounding so they are competent to care for the many patients with cancer they will encounter in their working lives.

There is some evidence that undergraduate education does not always prepare students sufficiently for their first year of work. A postal survey, performed by Goldacre *et al* in 2000/2001, found that 42% of newly qualified doctors in the UK disagreed with the statement *'My training at medical school prepared me well for the jobs I have had to do since starting work'* [4]. The Goldacre survey did not ask about preparedness for cancer care, but there is no reason to believe that this is any better than overall preparedness: holistic cancer care is complex and involves multidisciplinary working, awareness of psychosocial issues, and rapidly evolving treatments. Oncology educators would benefit from more information about the educational needs of undergraduate students, so that they can ensure doctors can leave medical school well prepared for looking after patients with cancer.

1.2 Background

1.2.1 Undergraduate medical education

Undergraduate medical education is undergoing a period of change. In 2006, in an editorial in the 40th anniversary issue of the journal *Medical Education*, Mark Jackson and Kenneth Calman wrote[5]:

'Much has manifestly changed since the 1960's when this journal was founded. Modern trends in medical education, most notably the emancipation of the undergraduate curriculum and the formation of new medical schools, have served to release medical students from the shackles of rote learning and didactic styles of teaching that characterised medical education and training in the second half of the 20th century.'

The changes to which Jackson and Calman refer are due to political and social influences upon the medical profession, and due to advances in adult learning theory, which I have summarised below.

1.2.1.1 Medical Education: changes due to theoretical advances

Six key theories about adult education have emerged during the last 30 years, and have significantly influenced the day-to-day teaching of medical students[6-9] (Table 1).

Table 1 An outline of six theories of adult education

Theory	Outline
Adult learning theory	Knowles' theory of andragogy states that adult learners can determine their own needs, that they bring their own experiences to the classroom, that they want learning to integrate with everyday life, that they learn in a problem-centred way, and that they are capable of self-motivation[10;11].
Social cognitive theory	Bandura's social cognitive theory states that adult learners interact with the learning environment as well as with the learning activity[12]. The learning environment includes the social environment for learning, which can both reward and hinder learning.
The reflective practitioner	The reflective practitioner theory states that adult learners are able to think critically and to analyse real life situations and learn from them.
Self-directed learning	Learning should be organised and focused around the learner (not the teacher), and adult learners strive to be self-directed in their learning[13].
Experiential learning	Kolb theorises that to learn a task, e.g. a clinical skill, adult learners should go through four phases: plan the task, perform the task, experience the inherent problems, and reflect upon the performance[14].
Problem based learning	Problem based learning theory states that learning should be active and student focussed[15]. There are many degrees to which this can be taken, but learning is usually based around an actual clinical/scientific problem or dilemma.

Medical schools have embraced the theoretical developments outlined in Table 1 and changed their curricula accordingly[16]. One example is that lectures have been phased out in favour of small group teaching, in order to focus on the learner rather than the

teacher. Teaching methods and learning environments have evolved in response to these theoretical developments.

Probably the most relevant theory for medical educators is Problem Based Learning (PBL), which was first used in Canada and has been adopted to a greater or lesser extent by most UK medical schools including Liverpool, Manchester and Glasgow. The theory of PBL was first developed by Maria Montessori, around 100 years ago. PBL is intended to be self-directed (and therefore follow the other principles of adult learning), constructive (it should build on the foundations of the learners' existing knowledge), collaborative (learners should interact with one-another) and contextual (by anchoring learning to common clinical problems). Ultimately, the aim is that the learning will be active and transferable. Although the details will vary from institution to institution, PBL students usually start each week with a small group discussion of a clinical case (either a contemporary real case or a vignette). Students then perform relevant individual study, and finally meet as a group to share their knowledge and conclude the case. A trained tutor will facilitate the group.

So after 40 years experience, what do we actually know about how successful PBL is? The answer to this question is very controversial. Initial reviews of the PBL literature were very optimistic, for example Albanese and Mitchell[17] and Norman and Schmidt[18] both published reviews in the early 1990s which concluded that PBL enhanced self-directed learning skills, and was highly popular with students and teachers. The authors of these early reviews expressed some concerns regarding the costs of implementing PBL, and possible cognitive weaknesses displayed by PBL graduates. Recently there have been several reviews of the literature which have found broadly against PBL, for example Colliver found that PBL was expensive in terms of resources, and that there was no evidence that it improved knowledge base or clinical performance[19]. The logical conclusion from all this seems to be that, as stated by Harden and Davis, '*The question for individual teachers is not whether to implement a PBL curriculum or not, but rather the extent to which they should introduce PBL into their own teaching*[15]'.

1.2.1.2 Medical education: changes due to UK societal and political influences

Doctors in the UK have had to reconsider their professional values in the light of recent profound changes in their working environment[20]. Events such as the revelations about

Harold Shipman, the GP who became Britain's most prolific serial killer[21] have publicly identified doctors as fallible, and regulation of the medical profession has been increased[22]. As a consequence, regulation of both undergraduate and postgraduate education has also increased - for example there has been a call for a national licensing examination for doctors completing undergraduate training[23]. Political pressure for increased regulation affects doctors at every stage in their training and their working lives.

The public's expectations of their doctors has changed and the doctor-patient relationship has evolved[24]: patients want more information and greater involvement in decisions about their care, and have better access to information via the internet. The impact of changing public expectations upon medical education is that there is now greater emphasis on teaching and learning communication skills and professional attitudes. Doctors' working relationship with other healthcare professionals is also changed, with redistribution of roles and care increasingly delivered by multidisciplinary teams. Undergraduate and postgraduate medical education aim to prepare doctors for multidisciplinary working[3;25].

The General Medical Council (GMC) document entitled *Tomorrow's Doctors* has had a significant political impact upon medical education in the UK since its initial publication in 1993[3;26]. *Tomorrow's Doctors* suggested that medical school curricula had become didactic and overburdened, and that rather than trying to keep up with the rapid expansion in medical knowledge, schools should aim *'to equip the new graduate with the necessary knowledge, skills and attitudes to enable him or her to enter the pre-registration period of training with confidence and enthusiasm'*[3]. The key recommendations of *Tomorrow's Doctors* included the following:

1) Reducing the burden of factual information imposed upon students
2) Increasing teaching about skills and attitudes (as well as knowledge)
3) Encouraging students to become lifelong learners
4) Introducing student choice
5) Teaching communication skills and public health

All UK medical schools have changed their curricula since the GMC made these recommendations, and *Tomorrows' Doctors* has been reviewed and re-issued,

containing specific guidance on the knowledge, skills and attitudes graduating medical students should possess [26].

1.2.2 Preparedness for practice

Research has identified inadequacies in PRHOs' preparedness for specific elements of their role including clinical skills[27-31] and palliative care[32-34]. There was little awareness of the extent of the gulf between medical students' training and their experiences upon starting work however, until the publication of the survey by Goldacre *et al*[4] (see section 1.1.2). The suggestion has been made that preparedness has improved since 2003 when Goldacre's survey was published, but this is based on qualitative data from one UK medical school[35].

The concept of preparedness for practice is rarely discussed outside the field of medical education, although it has been occasionally used in reference to other vocational courses such as social work and teaching[36;37]. In this section, I discuss why it is important for newly qualified doctors to feel prepared, explain the relationship between preparedness and competence, and review the factors that are known to influence preparedness.

Newly qualified doctors in the UK are known as Pre Registration House Officers or Foundation Year 1 doctors. Throughout this thesis, I use the abbreviation PRHOs to refer to newly qualified doctors.

1.2.2.1 Effect of lack of preparedness for practice

Evidence has suggested that PRHOs feel poorly prepared in relation to specific areas of their work, but we do not know the full significance of this apparent lack of preparedness. The PRHO year has been referred to as *'chaos by consensus'*[38], suggesting that some newly qualified doctors accept the problems that lack of preparedness brings. It is likely however that lack of preparedness has a negative impact in terms of the competence and well-being of doctors, and in terms of patients' perceptions and experiences of care. There is evidence that the transition from medical student to PRHO is stressful, and this stress has been related to a lack of preparation[39]. In a 1997/8 survey of UK PRHOs, 92% described stressful work-related incidents, most

commonly due to *'professional responsibility beyond their competence or experience'*[40]. Depression is more prevalent amongst doctors than amongst the general population, and most prevalent of all in junior doctors: in one study almost 40% of female PRHOs showed some degree of depression or emotional distress[41]. The full impact of lack of preparedness upon doctors' mental health and work performance has not been measured.

1.2.2.2 The relationships between preparedness, confidence, competence, and performance

The data within this thesis is based upon asking junior doctors the question *'do you feel prepared?'* Key to the correct interpretation of the data will be a clear understanding of the relationship between preparedness, confidence, competence and performance. Although there is some overlap between these four variables, the definitions and circumstances within which they may be measured are different. To begin this section I have defined preparedness, confidence, competence and performance. I have then considered what is known about the relationships between these four variables.

Preparedness - the subjective feeling that one's training was adequate, and that one is in a position to do one's best at work.

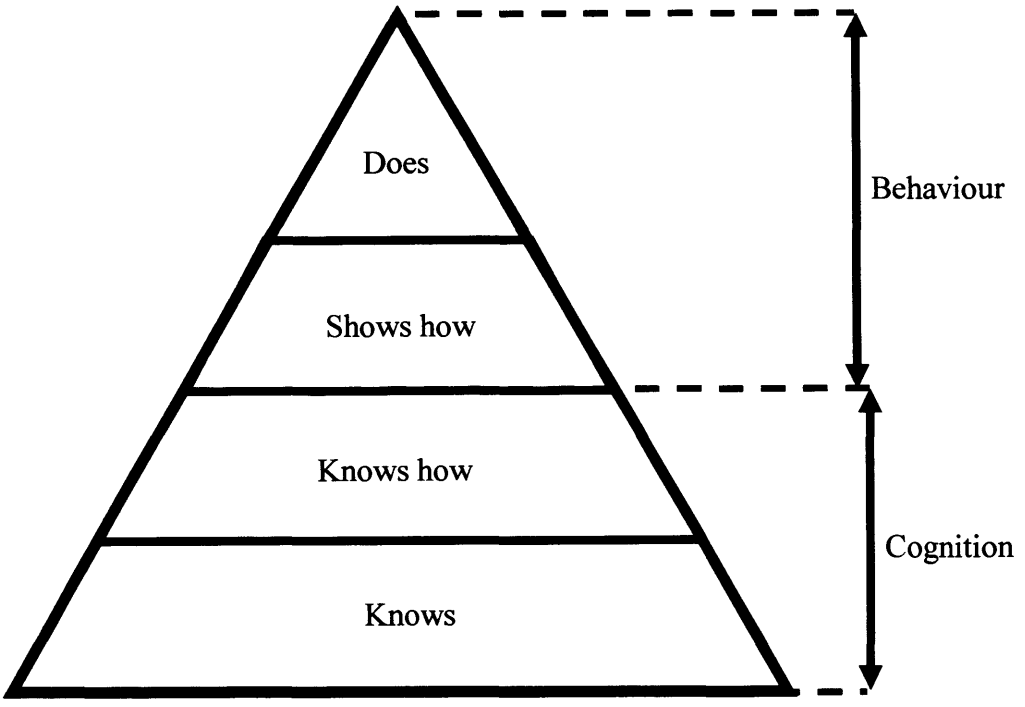
Confidence - the subjective feeling of trust in one's own abilities, qualities and judgements.

Competence - the objective assessment that a doctor possesses the appropriate knowledge skills and attitudes to practice safely at the expected level and knows their limitations.

Performance – the objective assessment of a doctor's behaviour in the work place, and their ability to transfer their cognitions (or competences) into appropriate behaviour (Figure 1).

Preparedness and confidence are therefore defined as subjective, whilst competence and performance are objective. Whilst there is no agreed or required level of preparedness, competence and performance should be measured against previously agreed standards.

Figure 1 The relationship between competence and performance in clinical skills (after Miller, 1990)[42]



Describing the relationships between preparedness, confidence, competence and performance is complicated because there is overlap between them, because there may be causal relationships as well as associations, and because there is relatively little research evidence upon which to base the description. It may be helpful to start by discussing the relationship between confidence and competence, because there is relatively rich data on the relationship, and it embodies the key dilemma when interpreting this thesis, i.e. that preparedness (like confidence) is a subjective measure and therefore it is difficult to know what it actually 'means'.

Evidence suggests that junior doctors are not able to accurately assess their own competence. A 1991 review concluded that health professionals' self-assessments were related to their general self-attributions, rather than independent assessment of specific competences[43]. A 2006 review concluded that the least competent doctors are also the

least able to self-assess their competence[44]. Two studies have been performed in which junior doctors' confidence to perform clinical skills (as assessed by asking the doctors to rate themselves) was compared to their competence (as assessed by observation): in one study there was a low correlation between confidence and competence[45], and in the other there was no correlation[46]. Conn *et al* (2003) tested junior doctors' confidence and competence over time, and found that for complex tasks confidence actually fell as competence improved[47]. Conn concluded that the relationship between confidence and competence is complex, and this certainly also applies to the relationship between preparedness and competence.

There are semantic issues involved in studying the relationship between confidence and competence, which may apply to the study of preparedness. Stewart *et al* (2000) used qualitative methods to explore the meaning of the words competence and confidence as used by PRHOs[48]. They found that when PRHOs said they felt *'confident'*, they meant *'I think I am competent'*, but when PRHOs said they felt *'unconfident'*, they meant *'I feel anxious or uncertain about this'*. The authors concluded that assessing the accuracy of PRHOs self-evaluations was complicated, because the relationship between confidence and competence was not linear.

The relationship between confidence and competence is analogous, but not identical, to the relationship between preparedness and competence. Two studies have compared PRHOs' and consultants' assessments of preparedness, in an attempt to investigate this relationship further. Wall *et al* (2006) asked all PRHOs and consultants in one deanery how prepared the PRHOs were to perform ten key competencies[49]. Jones *et al* (2001) performed a similar study in which the PRHOs were asked to rate their own preparedness, and the consultants were asked to rate the PRHOs competence[50]. In both these studies, preparedness was rated higher by the PRHOs than by the consultants. One problem with these two studies is that while the PRHOs rated their own individual preparedness, the consultants rated the PRHOs as a group. This may have reduced the validity of the results.

Neither preparedness, confidence, nor competence in a doctor guarantee performance. There is still a leap from cognition to behaviour, as illustrated by Millers' pyramid of clinical learning[42;50] (Figure 1). Little is known about the relationship between doctors' competence and their actual performance at work[44;51].

Self efficacy is a psychological construct which is relevant to the study of preparedness and confidence[52]. Self efficacy is defined as an individual's belief about their ability to control the world around them, including their ability to perform certain tasks, and is usually measured by questions which start *'Can you...?'* or *'Could you...?'*. The answers to self-efficacy questions are only reliable if the questions are asked in context. For example, not just *'Can you insert a cannula?'*, but *'Can you insert a large cannula into the ante-cubital fossa of a hypotensive patient who has received 6 cycles of chemotherapy?'* Self-efficacy is important because principles which apply to the assessment of self-efficacy may also apply to the assessment of preparedness. Self-efficacy may also influence performance: people with low perceived self-efficacy may dwell on poor performances and become dispirited, but people with high perceived self-efficacy are more likely to persevere with a task[53].

In summary, it is known that confidence and competence are not linearly or reliably related. Although confidence, competence, and preparedness are not the same, the literature about the relationship between confidence and competence provides some useful pointers for this thesis about preparedness. The wording of questions about confidence can affect the response, as can a doctors' beliefs about their own attributes. The literature on self-efficacy suggests that context can affect doctors' assessments of their ability to perform tasks. It is likely therefore that the relationship between preparedness and performance is complex, although this has not been studied.

1.2.2.3 Factors influencing preparedness

Previous studies have shown that problem based learning (PBL) courses, graduate entry courses, and shadowing programs* all increase preparedness for starting work (Table 2).

* Shadowing – a period of time which a medical student spends following a PRHO at work

Table 2 Published studies of interventions leading to improved preparedness

Location	Interventions compared	Improvements in preparedness for...
Australia[54]	Attending a problem based learning course vs. attending a traditional course	...interpersonal skills, confidence, collaboration with other health care workers, preventive care, holistic care and self-directed learning (but not for patient management and understanding science)
UK[55]	Attending a graduate entry course vs. attending an undergraduate entry course	...starting work: less anxious about the transition from student to doctor
UK[28]	After vs. before an extended induction course	...cannulation, venepuncture, taking blood pressure, and inserting a catheter
UK[56;57]	Attending a problem based learning course vs. attending a traditional course	...teamwork, communication, and dealing with uncertainty (but not for understanding disease processes)

The improvements described in Table 2 were documented after the introduction of new courses, but it is not clear which attributes of the new courses were responsible for the improvements, because changes such as the introduction of problem based learning and shadowing tend to be implemented simultaneously. There is qualitative evidence from Liverpool and Manchester that shadowing is a key component[58;59], and there is quantitative evidence from Manchester medical school that at the time of taking their final exams, students felt that particular placements had increased their confidence as potential doctors. These included community and elective placements, and placements at District General Hospitals (as opposed to University hospitals). These findings help to inform us about the relationship between training and preparedness. However, they do not fully explain it. In an editorial in Medical Education in 2003, Jill Morrison wrote that what is required is a *'bold collaboration'* between medical schools to compare the outcomes of different curriculums[60].

Preparedness is a subjective feeling, and as such may be influenced by individual attributes of PRHOs. For example, doctors who are older when they graduate feel more prepared for discussing end of life issues[61]. The individual attributes that influence preparedness have not been fully explored. Personality traits predict doctors' perception of their working environment and their response to work including stress levels[62]. Mental health may also influence preparedness: a study of male Norwegian doctors found that depression was associated with a tendency to self-criticism[63]. In this thesis, I aimed to consider the influence upon preparedness of PRHOs' individual attributes as well as the influence of their education.

1.2.3 Undergraduate oncology education

In order to understand how competence and confidence in oncology may be achieved, the next step is to look at undergraduate oncology education. There are a number of issues affecting teaching and learning about cancer:

1) Oncology teaching is prone to fragmentation, especially in systems based curricula[64]. Doctors from nearly every medical and surgical discipline are involved in training students about cancer, as are palliative care physicians, pathologists, and communication skills specialists.

2) Curriculum overload, which is a problem for medical education in general[3], is especially problematic for cancer education because oncology is a rapidly expanding discipline.

3) There is a psychosocial component to cancer care. Cancer is often associated with a strong emotional reaction. Up to 47% of patients with cancer have coexistent psychiatric disorders[65], and oncology consultants are more likely to suffer stress than other hospital consultants[66]. This is not unique to cancer care, but is an important factor for patients and staff and inevitably also students.

This section describes a narrative review of published surveys and consensus statements about undergraduate oncology teaching and discusses how these are relevant to medical training in the UK.

1.2.3.1 Surveys and consensus statements about oncology teaching

Surveys performed in Europe[67-69], North America[70], Australia[71], and the UK[72] between 1960 and 1992 all identified systematic problems with undergraduate oncology teaching including inadequate co-ordination, inadequate exposure of students to oncology, and insufficient resources. In 1992, a meeting was convened by the World Health Organisation (WHO) and the International Union Against Cancer (UICC) to discuss undergraduate teaching in light of these surveys. At the meeting a set of recommendations were agreed, which were subsequently published in the form of a monograph[73]. The WHO/UICC also published examples of oncology curricula from medical schools around the world, to provide guidance about how to organise and deliver oncology teaching. The WHO/UICC recommendations are shown in Figure 2.

An *'Ideal Cancer Curriculum'* was developed in Australia[74], and oncology teaching in Australia improved between 1993 and 1997[75;76], presumably partly as a result. A 2001 survey of newly qualified doctors in Australia found however that there were still significant problems with undergraduate oncology education. The authors surveyed doctors during their induction program for their first clinical post after leaving medical school, and concluded that the low ratings given by doctors to the quality of their oncology instruction constituted *'disturbing'* news for the Australian public[77]. The authors also found significant differences between doctors from reformed Australian Graduate Medical Programs (GMPs) and non-GMPs. The GMP graduates felt more competent at discussing death, breaking bad news, and advising on smoking cessation, but objective testing uncovered inferiorities in their knowledge of cancer diagnosis and prognosis.

The Australian studies documented declining exposure to patients with cancer between 1990 and 2001. For example in 2001, 56% of medical graduates had never examined a patient with mouth cancer (compared to only 20% in 1990), and 31% had never examined a patient with rectal cancer (compared to 17% in 1990)[77].

The authors of the Australian 2001 survey wrote a personal view in Lancet Oncology in 2006[78], expressing their concern both about the quality of oncology teaching, and about doctors' preparedness for looking after patients with cancer. Their concerns were based upon their narrative review of the literature as well as their own survey. They

recommended wider adoption of core curricula such as the Australian *'Ideal Cancer Curriculum'*, suggested better co-ordination would improve oncology education, and recommended that since assessment drives learning, there should be a universal final examination in oncology for all medical graduates.

Figure 2 Reproduction of the WHO/UICC recommendations for undergraduate oncology teaching[73]

1) There should be at least 2 weeks of study in oncology in the last year of the clerkship
2) The aims of cancer care are to decrease morbidity and mortality and to improve the quality of life of cancer patients and their families. Toward these ends, the oncology programme should acquaint the students with methods of prevention and early diagnosis, as well as state-of-the-art treatment techniques. Course content should be oriented toward the community physician and not toward specialists in oncology.
3) The course should include biological, clinical and epidemiological aspects of cancer. A standard minimum core syllabus should be established comprising the basic facts and principles that all physicians need to know. Critical thinking, reasoned judgement and problem-solving should be emphasised. Appropriate behaviour toward the patient and his family should be taught. Methods of self-teaching are recommended. Small-group teaching is preferable to formal lectures. Audio-visual and computer aids should be used.
4) Lack of co-ordination between the different disciplines teaching oncology can result in duplication on the one hand and defective information on the other. Contradictory information is often given to students. To avoid these occurrences, the nomination of a cancer-education co-ordinator is recommended.
5) Every oncology teaching programme should include arrangements for quality control and evaluation. Examinations are a good means of assessing the effectiveness of the programmes. External evaluation based on peer review by a medical association of by national or inter-European groups is also suggested.

1.2.3.2 Oncology teaching and learning in the UK

In the UK the most recent national survey about undergraduate oncology teaching was undertaken in 1993[72]. The authors of this questionnaire to oncology departments

concluded that the majority of oncologists were involved in teaching, but that there was considerable variation in the content of the curriculum delivered. For example, although 92% of departments taught the principles of management of malignant disease, only 65% taught side effects of chemotherapy and only 69% taught about terminal care.

A qualitative study about cancer care education in the UK, funded by Cancer Research UK and published in 2003, considered oncology training for undergraduate and postgraduate doctors, nurses, physiotherapists and therapy radiographers[64]. 57 participants, including 14 doctors, were interviewed (no medical students). The authors concluded that in newer undergraduate curricula cancer was often taught during general attachments and used as a vehicle to convey general principles. The key finding of the study was that practice is central to learning. In other words, cancer care professionals learn by doing: acting, knowing and understanding are a holistic experience. I have considered these findings in the design and analysis of my study.

Both surveys described above have focussed on the role of oncology specialists in teaching students about cancer. Oncologists may not deliver the majority of the oncology teaching undergraduate students receive however; instead primary care physicians, palliative care physicians, surgeons, nurses, and others may deliver it. This thesis is written from the point of view of an oncologist, and asks primarily how the oncology community can improve patient care through their participation in teaching (see section 1.1.2 page 18). This question must be asked in the context of the wider medical curriculum.

The number of studies about oncology teaching in the UK is limited, and we must consider the extent to which the evidence from abroad is applicable to the UK setting. There is a conflict between the UICC/WHO consensus statement on undergraduate oncology education and the recommendations in *Tomorrow's Doctors*. The WHO/UICC recommend that undergraduate oncology teaching should focus on the needs of primary care physicians, but *Tomorrow's Doctors* states that undergraduate education should focus on the needs of newly qualified doctors. It is not clear how oncology educators in the UK should respond to this conflict. Neither is there a consensus about which competencies are required for newly qualified doctors looking after patients with cancer. A search of the UK national curriculum for newly qualified doctors for the terms 'cancer' and 'onco$' did not generate any hits[25]. Undergraduate

oncology educators would benefit from more information about newly qualified doctors' educational needs and their care of patients with cancer, so they can rise to the challenge set in *Tomorrow's Doctors*.

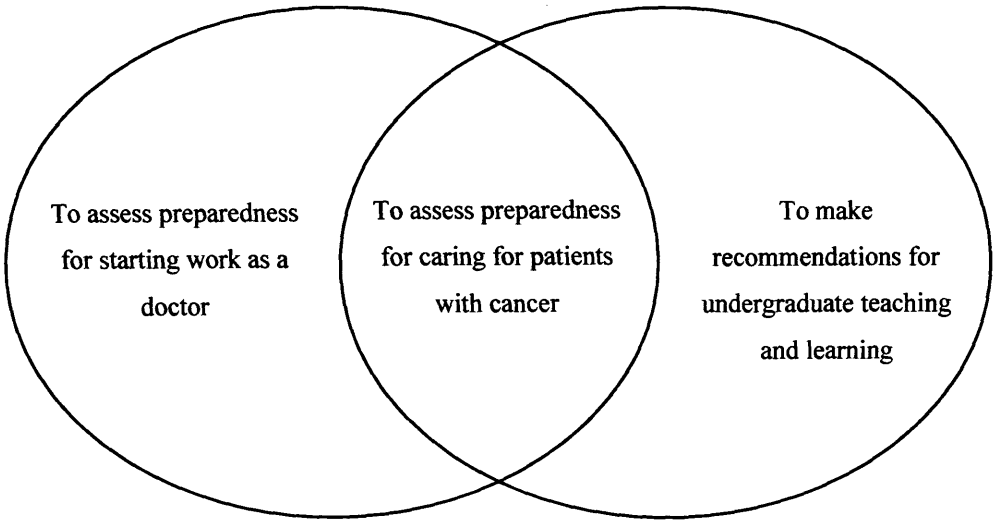
1.2.3.3 Directions for future research about oncology teaching and learning

The clearest guidance about directions for future research about oncology teaching and learning comes from the UICC. The WHO/UICC recommendations for undergraduate oncology teaching (Figure 2 page 31) were discussed at the UICC cancer congress in 1994, and a stand was taken *'not to perform any more major cancer education surveys because the outcome keeps on providing the same data, but to start developing small action projects'*[79]. In designing the aims and objectives for my thesis, I put this statement in the context of changes that have occurred in medical education in the last decade, and the increasing importance placed upon preparedness for practice.

1.3 Thesis aims and objectives

My aims in this thesis were to study junior doctors' preparedness for caring for patients with cancer, and to investigate how such preparedness related to the oncology teaching they received as undergraduates. This inherently involved studying preparedness for care of all patients by junior doctors (Figure 3). I aimed to design the studies so that the results would be relevant both to undergraduate oncology education and to undergraduate medical education in general. The desired outcome was to make recommendations to improve the care of patients with cancer by improving doctors' cancer related knowledge, skills and attitudes.

Figure 3 Outline of the thesis aims



The thesis objectives were:

1) To undertake a systematic review of the oncology teaching interventions that have been published since the 1994 UICC consensus statement (Chapter 2).
2) To describe suitable methods for studying newly qualified doctors' preparedness (Chapter 3).
3) To undertake an interview study to investigate how prepared newly qualified doctors feel for caring for patients with cancer and to investigate possible factors that may contribute to preparedness (Chapter 4).
4) To undertake a large scale study of all newly qualified doctors in 2005, to investigate changes in preparedness for practice since 2001, preparedness for caring for patients with cancer, and which aspects of undergraduate medical education improve preparedness (Chapter 5).
5) To make recommendations for interventions, based on the evidence gathered from objectives 3 and 4, aimed at improving cancer care through better education (Chapter 6).

Chapter 2. A systematic review of published interventions in undergraduate oncology education

'[Do not] perform any more major cancer education surveys because the outcome keeps on providing the same data [...] start developing small action projects'

The UICC cancer congress, New Delhi, 1994

Summary

I searched MEDLINE, Psychinfo, ERIC, TIMELIT, EMBASE, CINAHL and the Cochrane CENTRAL Register of Controlled Trials (CENTRAL), for evaluations of oncology teaching projects, published between Jan 1993 and Aug 2004. I found 48 papers. Cancer patients have an important role to play in undergraduate teaching. Mannikins also aid learning. Teaching about cancer screening and prevention changes students' behaviour. There should be more emphasis on educational research within the field of oncology.

2.1 Introduction

One of the aims of this thesis was to design an intervention aimed at improving cancer care through better education. I have therefore systematically reviewed previously published oncology teaching interventions. I limited the review to studies published since 1993. This date corresponded with a change in the focus of medical education in the UK (represented by the publication of *Tomorrow's Doctors)*[3]. 1993 also corresponded with the last review of the literature about undergraduate oncology teaching[73], which was performed by an international group of experts, and resulted in the publication of a series of recommendations (see page 31).

2.2 Methods

2.2.1 Search strategy and selection criteria

I searched MEDLINE, Psychinfo, ERIC, TIMELIT, EMBASE, CINAHL, the Cochrane Register of Controlled Trials (CENTRAL), and reference lists from relevant articles, using the search terms shown in Table 3. For ERIC and TIMELIT, it was not necessary to include the catch-all educational search terms because these were databases of educational literature.

I excluded published abstracts without complete articles because of the inability to obtain detailed information regarding participants and interventions, and restricted the search to articles dated from 1/1/93 to 1/8/04 (the date of the search). I read the abstracts of all the papers identified, and selected papers for further consideration according to the following criteria.

2.2.1.1 Inclusion Criteria

- Studies evaluating oncology teaching interventions.
- Descriptive studies (interventions with before and after, or after alone evaluations), cohort studies, and intervention/control or randomised controlled trials.
- Studies where all (or a significant and identifiable proportion) of the participants were medical students.

- Studies where the participants were doctors in their first year of practice.

2.2.1.2 Exclusion criteria

- Studies where the participants were senior house officers, residents, senior doctors, dentistry or nursing students, or patients.
- Multiple publications referring to the same intervention (only the most comprehensive or conclusive study was included).
- Studies of interventions for teaching palliative or supportive care. This topic has been reviewed elsewhere[80].
- Studies where the intervention was not evaluated.

Table 3 Search strategy

Search terms	Database and number of hits
(oncolog$ OR cancer) AND (educat$ OR undergraduate OR teach$)	MEDLINE = 16,418 and Psychinfo = 2,172
(oncolog$ OR cancer$)	ERIC = 400 and TIMELIT = 1,255
(oncolog$ OR cancer) AND (educat$ OR undergraduate OR teach$) • AND medic$ AND student • AND interns-and-residents • AND PRHO • AND house officer • AND pre-registration	EMBASE = 931 and CINAHL = 2,312
(oncolog$ OR cancer) AND (educat$ OR undergraduate OR teach$)	Cochrane CENTRAL register of controlled trials = 1,002

$ truncates the search term, i.e. 'educat$' includes education, educator, educational...

2.3 Results

The search resulted in 81 abstracts, of which I excluded 33 after reading the full text articles. The reasons for exclusion were that the participants were not medical students (n=21), there was no intervention (n=3), the intervention was not evaluated (n=5), or multiple publications described the same study (n=4).

The remaining 48 papers reviewed divided naturally into 5 subject areas:

- Oncology courses/attachments/electives
- Teaching about specific types of cancer
- Cancer screening and prevention
- Examination skills necessary for cancer detection
- Communication skills

The following sections describe the teaching and learning activities in oncology which were reported in these 48 papers.

2.3.1 Oncology courses/attachments/electives

There were 13 papers describing oncology courses. The courses ranged from portfolio learning to summer schools (Table 4).

Table 4 Oncology courses, attachments and electives

Design	Author	n	Intervention	Outcome measures	Outcome
Descr.	De Vries 2002[81]	39	Oncology Summer School	Knowledge test before and after and student satisfaction	Improvement in knowledge (p=0.001)
Descr.	Barrett 2001[82]	N/S	Oncology attachment	Student satisfaction	In 1998 rated as the best part of their curriculum
Descr.	Smith 2001[83]	24	Oncology attachment	Knowledge tests before, after and at six months	Knowledge rose by 40% (p=0<0.01). 90% of knowledge retained at 6 months
Descr.	Jazieh 2001[84]	16	Oncology summer elective	Knowledge tests before and after	Scores rose from 46.6% before to 53% afterwards (p=0.001)
Descr.	Plymale 99[85]	124	Oncology module taught by cancer patients	Satisfaction of students and cancer patients	Students satisfaction 4.4/5 (Likert scale)
Descr.	Mota 99[86]	12	Student-staffed oncology clinic	Students and patient satisfaction	92% of students felt it was the best part of their curriculum
Int/Con	Mehta 98[87]	164	Intervention group - web based learning tool. Control group - normal teaching.	Knowledge test before and after and student satisfaction	Knowledge equivalent in the two groups, feedback positive
RCT	Finlay 98[88]	159	Intervention group – follow a patient with cancer for 9 months. Control group - normal teaching	Hidden questions in final year OSCE	Overall trend to improved scores for intervention group (most marked for lowest achievers)
Descr.	Blair 96[89]	275	Use of computer information system	Students satisfaction	87% of students said course was valuable
Descr.	Besa 95[90]	N/S	CAL module on oncology	Students satisfaction	Students gave course 4.1/5 for design and 3.88/5 for applicability (Likert scale)
Descr.	Conatser 93[91]	23	Students followed up children with cancer	Student and parent satisfaction	Feedback positive
Descr.	Axelrod 93[92]	49	Summer oncology fellowship	Student satisfaction	Feedback positive
Descr.	Fukuchi 2000[93]	16	Interactive computer assisted board game	Before and after performance at game, student feedback	Performance improved, students reported increased awareness of multidisciplinary work

Descr. = Descriptive study; Int/Con = Intervention and Control; CAL = computer aided learning; OSCE = Objective Structured Clinical Examination; N/S = Not stated; RCT = Randomised controlled trial

2.3.1.1 Portfolio learning

There are two trials of portfolio learning in oncology. A portfolio is a collection of material made by a learner over a period of time, based upon their experiences.

Finlay *et al* (1996) randomly allocated 159 medical students to intervention (portfolio) or control (standard) oncology teaching[88]. The portfolio group were allocated a patient with cancer to follow up for 9 months. The students attended 'their' patient's clinic visits, scans, and homes if appropriate, and produced a portfolio of written work consisting of reflections on their interactions with the patient, commentary on the cancer, press cuttings, and photographs. The control group received the standard oncology curriculum. The portfolio learning was popular - 90% of the students felt that it was a worthwhile and valuable experience[88;94]. In a summative assessment, there was a trend for the intervention group to perform better in oncology questions.

In a cohort study of portfolio learning in Texas, 23 medical students were paired up with children who had cancer or other chronic illnesses[91]. The evaluation of this project was qualitative, and the feedback was positive. The main advantage of pairing up students and children was that real friendships, often based on fun, could develop.

2.3.1.2 The standardised use of cancer patients in teaching

Most clinical teaching involves patients in an opportunistic way; however, two groups of researchers have designed oncology teaching interventions which involve patients in a more standardised way. In South Carolina, 42 trained cancer survivors taught structured cancer skills courses for 124 medical students[85]. The author's primary outcome measure was the satisfaction of the cancer survivors, and this was high: 63% described the experience as 'outstanding', and 100% said they would be willing to help again.

A Brazilian medical school piloted a student-staffed oncology clinic[86]. In this clinic, 12 medical students assessed the patients, planned the treatment, and prescribed the chemotherapy. They were closely supervised. 93 cycles of chemo were prescribed to 53 patients, without any adverse incidents. 92% of the students rated the teaching clinic the best thing they had done at medical school.

2.3.1.3 Computer aided learning

4 papers describe computer aided learning (CAL) modules for teaching oncology[87;89;90;93]. None of the authors were able to demonstrate that CAL resulted in better knowledge retention than more traditional forms of teaching, but all reported that student feedback was positive. Besa *et al* (1995) developed a cancer learning centre similar to a clinical skills centre, involving several CAL tutorials[90]. Some tutorials involved manikins; for example, a sigmoidoscope and a model colon with lesions. In the feedback, the students were particularly enthusiastic about the tutorials with manikins.

2.3.1.4 Summer schools and electives

5 papers describe short courses in oncology[81-84;92]. The aims of these courses included; teaching oncology skills for primary care[81;83;84], encouraging students to take up careers in oncology[92], and encouraging an interest in research[84]. Student feedback was positive after all the courses, and when knowledge was tested, it was increased[81;83;84]. The courses used a wide range of educational activities including clinics, multi-disciplinary meetings, problem based learning, journal clubs, projects, and poster presentations. It was not possible from reading the papers to ascertain which activities were most valuable.

2.3.2 Learning about specific types of cancer

There were 8 papers describing different interventions to teach about specific cancers including breast, prostate, and ovarian cancer (Table 5).

Table 5 Learning about specific types of cancer

Design	Author	n	Intervention	Outcome measure	Outcome
Int/Con	Seabra 2004[95]	60	Intervention - CAL module about prostate cancer; control - normal teaching	Knowledge test after intervention and student satisfaction	Test performance similar in two groups
Descr.	Shapiro 2003[96]	20	Theatrical performance about ovarian cancer	Student satisfaction	Feedback positive
RCT	Miedzybrodzka 2001[97]	171	Intervention group - CAL module about familial breast cancer Control group - normal teaching.	Knowledge test after intervention and student satisfaction	No difference between the two groups
Descr.	Plymale 2000[98]	30	4 part program including lecture, SCIM, PBL, and manual	Student satisfaction	Students expressed preference for the SCIM over other teaching.
Descr.	Sloan 1997[99]	30	Breast cancer SCIM	Student, patient and faculty satisfaction	Feedback positive
Descr.	Teague 1996[100]	173	Small group discussion of genetic cases	Knowledge tests before and after	Scores increased from 58% before to 85% after ($p<0.01$)
Descr.	Mooney 1995[101]	51	Electronic study guide on breast cancer	Student satisfaction	Feedback positive
Descr.	Sneiderman 1994[102]	165	CAL tutorial on malignant melanoma	Student satisfaction	Some negative technical comments

Int/Con = Intervention and Control arm study; Descr. = Descriptive study; RCT = Randomised controlled trial; CAL = Computer aided learning; SCIM = Structured Clinical Instruction Module; PBL = Problem based learning; OSCE = Objective structured clinical examination; N/S = not stated.

2.3.2.1 Drama

A one hour theatre performance was given by an ovarian cancer survivor to a mixed audience including faculty and students[96]. The performance was followed by a half hour panel discussion. The feedback was positive and the attendees felt the performance would influence their clinical practice (mean 4.7 out of 5 on a Likert scale).

2.3.2.2 Structured Clinical Instruction Modules

The structured clinical instruction module (SCIM) is a teaching method developed in Kentucky. Students rotate around several 10 minute teaching stations performing tasks, e.g. mammogram interpretation, and receiving feedback. A breast cancer SCIM was first published as a pilot in 1997[99]. The SCIM was then incorporated into a breast cancer educational package, and it was the most popular part of the package, scoring 4.6 out of 5 on a Likert scale[98]. For comparison, the lecture scored 4.0/5 and the problem based learning scored 3.6/5.

2.3.2.3 Computer aided learning in specific cancers

Computer aided learning (CAL) courses on breast cancer, prostate cancer, melanoma or familial cancer are described[95;97;101;102]. None of the authors were able to show that CAL improved student learning, even the randomised trial of 171 students[97]. However, in the randomised trial attendance was only 27% and 28% in the two arms.

2.3.3 Learning about cancer screening and prevention

There were 4 papers about teaching cancer screening and prevention (Table 6). Training about cancer screening and prevention can increase medical student's knowledge[103;104] and self-rated skills[105;106], and change their behaviour[103]. A one week course on sun awareness increased students knowledge about sun protection, and following the course, students reported fewer episodes of sunburn and significantly more use of sun protection. These changes in behaviour were sustained out to the follow up time of 12 months[103]. A survey at Boston University found that the percentage of students who reported that they had 'already practiced' cancer prevention rose from 53% to 83% ($p<0.001$) after increasing the number of hours of teaching on cancer prevention from 6 to 15[106].

Table 6 Learning about cancer screening and prevention

Design	Author	n	Intervention	Outcome measure	Outcome
Descr.	Madan 2003[104]	27	60 minute structured lecture on breast cancer screening	Pre and post knowledge test. Student satisfaction.	Knowledge scores increased from 84% to 93% (p=0.0016). 96% of students said the course should be offered routinely.
Cohort	Geller 2002[106]	600	Implementation of a cancer prevention curriculum and increasing the hours of cancer prevention education from 6 to 15	Student's perceived competence, knowledge, and satisfaction.	Students who had completed the altered curriculum felt more confident, and their perceived knowledge increased.
Descr.	Liu 2001[103]	98	One week sun awareness course	Knowledge before, after and at 1 year. Self reported sun protection behaviour.	Knowledge increased (62% pre, 89% post, and 73% at one year p<0.01). Sun-protection behaviour increased.
Descr.	Geller 2000[105]	246	Cancer skills laboratory consisting of 2 hours of teaching in 15 minute stations	Before and after testing of self-rated ability to perform clinical skills	Self rated skill increased from 2.1/5 to 3.8/5 (p<0.001).

Descr. = Descriptive study

2.3.4 Learning examination skills necessary for cancer detection

There were 11 papers on the subject of teaching students how to exam patients (Table 7).

2.3.4.1 The use of models and manikins

Silicone and dynamic models have been used to teach breast examination[107-110]. The use of training models did improve the ability of the students to detect lumps[107;109;110]; however in all these studies, students' ability was assessed using the training models thus introducing a systematic bias in favour of the intervention group (because the control group had not used the models at any stage prior to the assessment).

A testicular examination manikin called "Zack"®, which has one normal and one lumpy testicle, has also been evaluated[111]. "Zack" formed part of a teaching module including a PowerPoint lecture, a video, and reading materials. The student feedback was positive.

Table 7 Learning examination skills necessary for cancer detection

Design	Author	n	Intervention	Outcome measure	Outcome
Descr.	Taylor 2004[111]	N/S	Testicular examination model	Student satisfaction	Feedback positive
Int/Con	Gerling 2003[109]	48	Standard vs. 'dynamic' models to teach breast examination	Ability to detect lumps in breast models	Lump detection higher for dynamic model group ($p<0.001$)
Descr.	Cliff 2003[112]	27	Lecture and illustrated booklet on skin cancer	Diagnostic ability	Increase in correct diagnoses ($p<0.001$)
Int/Con	Madan 2002[110]	47	Intervention group –breast examination video and model; control group – no teaching	Ability to detect lumps in breast models	Improvement in intervention group ($p<0.05$)
RCT	Aliabadi-Wahle 2000[107]	30	Intervention group – 1 hour teaching on breast examination; control group – no teaching	Ability to detect lumps in breast models	Improvement in intervention group ($p<0.01$)
Descr.	Harris 99[113]	7	Internet based education on pigmented skin lesions	Recognition of skin lesions	Improvement in correct diagnoses (63% before and 74% after $p=0.002$)
Cohort	Chalabian 96[114]	120	Intervention group – SCIM on breast examination; control group - normal teaching	Breast examination skills	Higher score for cohort taught using SCIM (score 73 vs. 36, $p=0.03$)
RCT	Campbell 94[115]	54	Intervention group – teaching on breast examination from standardised patients; control - normal teaching	Ability to detect lumps in breast models	Intervention group higher sensitivity (71% vs. 55% $p=0.001$) but lower specificity (48% vs. 71% $p=0.001$)
RCT	Pilgrim 93[116]	156	Intervention - video and lecture on breast examination plus teaching from standardised patients; control – video and lecture only	Ability to detect lumps in breast models	Improvement in lump detection in intervention group ($p<0.05$)
RCT	Chart 2001[108]	176	Intervention - standard teaching on breast examination plus home study module; control – standard teaching	Knowledge test, student satisfaction	Scores increased by 2.23 in intervention group and 0.19 in control group ($p=0.001$), feedback positive
Int/Con	Heard 1995[117]	144	Intervention – breast examination teaching by standardised patients; control - normal teaching	Knowledge test, and breast examination skills	Knowledge equivalent, intervention group better clinical skills (84.1% vs. 69.9% in OSCE, $p<0.001$)

Descr. = Descriptive study; Int/Con = Intervention and Control arm study; RCT = Randomised controlled trial; N/S = not stated; SCIM = Structured Clinical Instruction Module; OSCE = Objective structured clinical examination

2.3.4.2 The use of standardised patients

Four studies found that using standardised patients* to teach breast examination skills was acceptable and feasible. Students who were taught by standardised patients performed better in a clinical skills examination[114-117].

Two studies randomised students to receive their teaching from standardised patients or from faculty, and then compared the students' ability to detect lumps in a breast model. The students taught by the standardised patients detected more lumps[114-116].

2.3.4.3 Learning about pigmented skin lesions

Cliff *et al* (2003)[112] gave a lecture and an illustrated booklet on pigmented skin lesions to 27 students (no control group). The students' diagnostic accuracy improved significantly after the intervention (p=0.001).

2.3.5 Learning communication skills for oncology

There were 12 papers about teaching communication skills for oncology (Table 8). There are four previously published reviews about the teaching of communication skills[118-121]. In the process of performing this review, I considered all the papers referenced by these four previously published reviews in which cancer was the topic of communication or in which cancer patients were included.

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* Standardised patients, also called simulated patients, are actors that are trained to present a standardised patient or problem that will not vary from student to student

Table 8 Learning communication skills for cancer

Design	Author	n	Intervention	Outcome measure	Outcome
RCT	Klein 2000[122]	249	Intervention –teaching with patients with cancer; control –teaching with non-cancer patients	Attitude questionnaire, rating of student's interviews with simulated patients	Positive effect of using cancer patients on attitudes and performance, effect detectable at 2 years
Descr.	White 99[123]	27 (1 m/s)	Course on breast health aimed at improving communication	Rating of interviews with simulated patients.	5% improvement in scores (p=0.039)
Descr.	Mann 96[124]	25	Breast cancer module involving role play	Student feedback	Rating 3.85/5 on a Likert scale
Descr.	Keefe 2002[125]	N/S	Simulations to teach shared decision making	Formative and summative assessments (details not given)	Module is a good teaching tool (reasons not stated)
Descr.	Henry-Tillman 2002[126]	146	Each student shadowed a new patient in the breast clinic	Questionnaire about knowledge of empathetic communication	No significant changes in knowledge of empathy
Cohort	Hamadeh 2001[127]	70	Short course in truth telling (i.e. paternalism vs autonomy)	Questionnaire on attitudes to truth telling	Reduction in paternalistic attitudes
Descr.	Garg 97[128]	359	Course on breaking bad news, including role play scenarios involving cancer	Questionnaire on attitudes to breaking bad news	Increase in students who had a 'plan' for breaking bad news from 49% to 92%
Descr.	Rosenbaum 2002[129]	341	Small group teaching involving role play with standardised patients	Self reported comfort levels in breaking bad news	Significant increase in student's comfort (by one standard deviation)
Cohort	Vetto 99[130]	155	One cohort taught in breaking bad news, one not	OSCE station involving breaking bad news	Cohort who were taught scored higher (85% vs 79% p=0.05)
Descr.	Cushing 95[131]	231	Course on breaking bad news including role play, video, simulated patients	Questionnaire about knowledge and confidence in breaking bad news	Increase in knowledge and competence
Int/Cont	Colletti 2001[132]	38	Intervention - teaching about breaking bad news (using standardised patients); control - no teaching	Ability to deliver bad news, transferability of skills in breaking bad news	Intervention group performed better; their skills were transferable
Descr.	Farber 2003[133]	15 (0 m/s)	Role play using patients with cancer to teach breaking bad news	Questionnaire on attitudes to breaking bad news	Participants sensitised to the need to use empathy

RCT = Randomised controlled trial; Descr. = Descriptive study; Int/Con = Intervention and Control arm study; OSCE = Objective structured clinical examination; N/S = not stated; m/s = medical student; Comm. = communication

2.3.5.1 Communication with patients with cancer

Klein *et al* (2000) randomly allocated students to communication skills teaching with either patients with cancer or 'other' patients, and then followed them up for 2 years[122]. Students in the 'cancer' group were more likely to respond empathetically to patients, and more likely to express favourable attitudes e.g. listening to patients is important.

Three other studies describe the successful use of role play to teach oncology specific communication skills[123-125].

2.3.5.2 Breaking bad news

Role plays of cancer related scenarios have been used to teach students how to break bad news[128-133]. In one study trained patients with cancer were used in the role plays[133]. Colletti *et al* (2001) showed that bad news breaking skills were transferable from cancer scenarios to other scenarios[132]. Their intervention students (trained in breaking bad news) performed significantly better than their control students (untrained). The training scenarios involved either cancer or a miscarriage, but all students were evaluated using the miscarriage scenario. Within the intervention group the 'cancer' trained students performed as well as the 'miscarriage' trained students, so the skills were transferable.

2.4 Discussion

The findings of the systematic review were as follows:

- The involvement of patients in teaching and learning in oncology is popular with students; in addition, where patient satisfaction has been tested it has also been found to be high. Several authors have investigated methods of standardising the involvement of patients e.g. by training patients to take a specific role in the teaching, or giving students a particular learning objective to achieve with a particular patient.
- There is a trend towards improved performance in assessments after portfolio learning based around the follow up of a single patient with cancer.
- Students learning breast examination from standardized patients perform better than students taught by faculty (as assessed by a clinical exam).

- Students learning breast examination by using silicone models have higher sensitivity for detecting breast lumps (as assessed by ability to detect lumps in silicone breast models).
- Computer aided learning modules have a role, but are not superior to other types of learning.
- Learning about cancer screening and prevention increases students' knowledge, improves their self rated skills, and changes their behaviour.
- Students who learn communication skills from patients with cancer have better skills and attitudes than students learning from non-oncology patients.

The studies reviewed here indicate that oncology educators have kept up with the recent changes in medical education: the majority of the authors describe small group work, and the emphasis on the involvement of patients in teaching shows that oncology educators have embraced the need for experiential learning. Portfolio learning methods are also examples of learner centred teaching[134]. Published oncology courses often involved the students in individual projects, which fostered life-long learning skills. Attitudes were regularly used as outcome measures[87;106;122] or taught explicitly[126;127].

There are barriers to the widespread adoption of these interventions. The quality of the studies is variable. Many of the studies are descriptive so it is difficult to draw conclusions about best teaching practice: of studies presented here, only 13/48 (27%) had control groups, and in only 7/48 were students randomised to intervention or control. Student feedback was the only endpoint in 16/48, and the feedback was overwhelmingly reported as positive. Other authors have found similar limitations - a review of communication skills teaching found only 21% of papers had control groups[118], and a review of palliative care teaching found only descriptive studies[80]. The papers are often published in journals that are not widely available, and many of the interventions are labour intensive and potentially impractical.

Despite the fact that most oncology departments are involved in teaching[72] only 48 studies of interventions for teaching oncology to medical students have been found. I may have missed some relevant studies by using a free text search rather than index terms, or by not searching for some words, phrases and index terms that would be specific to education about particular cancer related topics (e.g. 'mammography'). It is

also likely that there is extensive good teaching practice in use that is not documented or published; it is important therefore to discuss potential barriers to the publication of research into teaching oncology. Teaching innovations tend to be implemented in a non-systematic way, making the outcomes difficult to publish. Oncologists are not routinely encouraged to learn the methodology for educational research. Research into teaching is undervalued in the oncology community: many of the papers in this review are published in journals which are low on the citation index (median impact factor 1.1[135]), which reduces their perceived worth. There should be more emphasis on performing educational research in the field of oncology.

2.5 Conclusion

There are 48 papers describing the evaluation of undergraduate teaching interventions about cancer. Any new intervention should incorporate published best practice where possible.

Chapter 3. Participants and methods

Prepare

To put beforehand into a suitable condition for some action; to get ready, make ready, put in readiness; to fit out, equip. To bring into a state of mental or spiritual readiness

Preparedness

The state or condition of being prepared; readiness.

Unprepared

Of persons: Not in a state of preparation; not ready

Excerpts from the Oxford English Dictionary

Summary

In this chapter I describe the methods used in two studies of newly qualified doctors; one qualitative and one quantitative. 25 purposely selected newly qualified doctors and 15 of their consultants participated in semi-structured interviews about how prepared the new doctors were for caring for patients with cancer. I turned the emergent themes into a questionnaire for all 5143 new doctors in the UK in May 2005. We used this combination of qualitative and quantitative methods to increase the validity of our conclusions. The results of these two studies are reported in chapters 4 and 5.

3.1 Introduction

This chapter outlines the steps taken to ensure that the design of the questionnaire underpinning this thesis was appropriate and relevant. I define the role of the Pre-Registration House Officer (PRHO) and their duties at work. I then describe the methods for two studies of PRHOs' preparedness for practice: an interview study and a questionnaire study. In the interests of clarity, I describe the methods in this chapter, and the results in Chapters 4 (interview study) and 5 (questionnaire study).

3.2 Participants

The participants included all 5143 PRHOs registered with the General Medical Council* (GMC) for the year 2004/5.

3.2.1 Definition

PRHO posts are the first employed posts that mark the transition from medical student to doctor. Doctors have to complete a year in an approved PRHO post, during which time they must be provisionally registered with the GMC. Doctors must receive a satisfactory report from their PRHO year supervisor before they can be fully registered with the GMC. The majority of PRHOs are new doctors who have just graduated from medical school, although some PRHOs (and therefore some participants in this study) are relatively senior doctors who have moved to the UK from abroad and need to obtain GMC registration. In England 46% of PRHOs are male and 54% female, and the majority are aged 20-24 [136].

* The professional body that regulates doctors in the UK

The purposes of the PRHO year, as laid out in the GMC document *The New Doctor* (2005), are[137]:

- To make sure the new doctor can put into practice the knowledge, skills and attitudes learned as a student
- To gain new knowledge and skills, whilst fine-tuning professional attitudes
- To link smoothly with further training

For the purposes of this study the list of PRHOs and the list of doctors who are provisionally registered with the GMC will be considered to be the same; however, a small but unknown number of doctors provisionally register but then do not work as PRHOs.

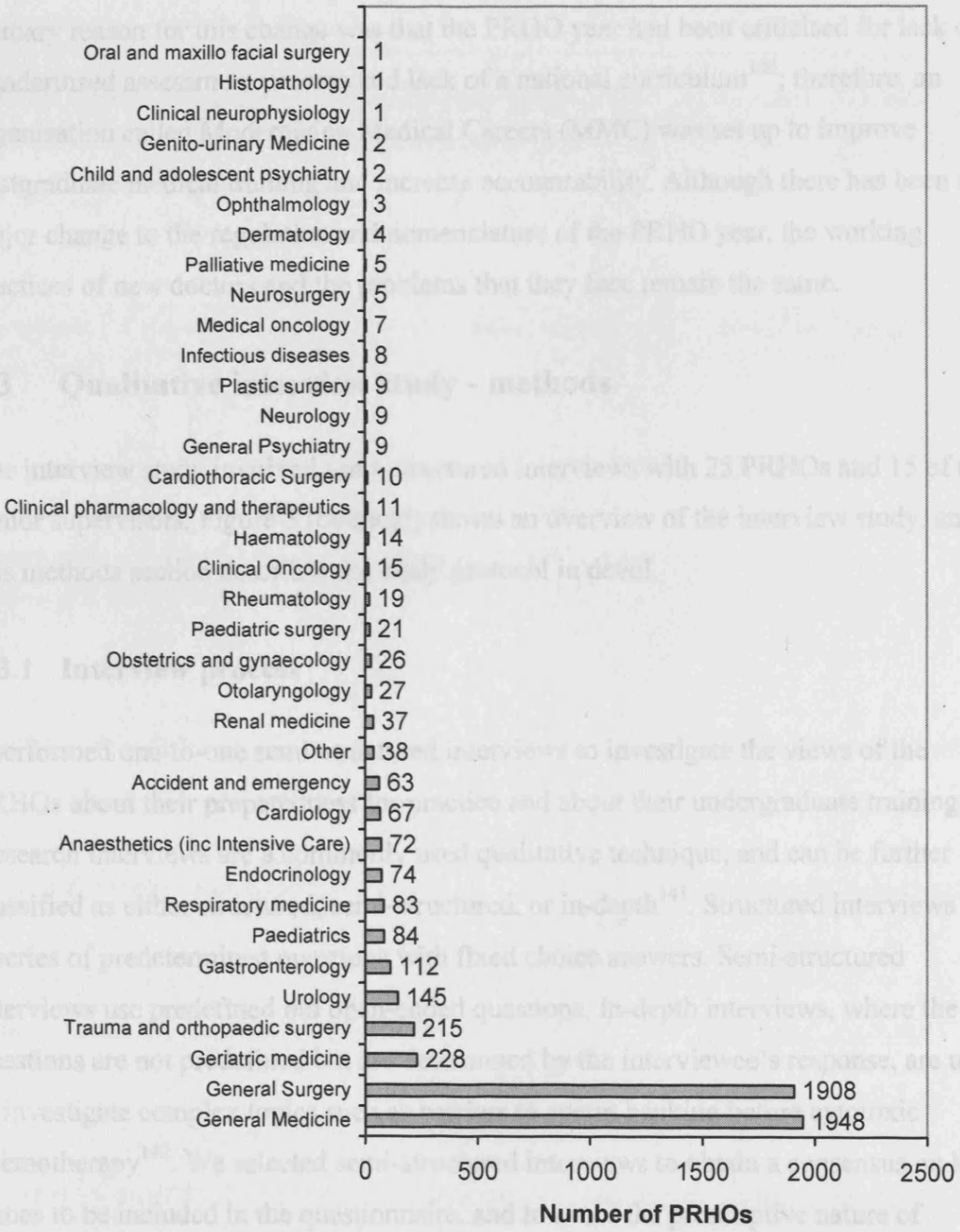
The responsibility for supervision and assessment of PRHOs is shared between medical schools, postgraduate deaneries, and NHS trusts. Medical schools are responsible for approving their graduates to enter the PRHO year. Postgraduate deaneries are responsible for making sure that PRHO placements are suitable, allocating PRHOs to placements, and training the PRHOs. NHS trusts employ and pay the PRHOs and are jointly responsible (with the postgraduate deaneries) for running induction courses, identifying and training the PRHOs' educational supervisors, and providing PRHO training.

3.2.2 Duties of PRHOs

The PRHO year comprises either 2 x 6 month placements or 3 x 4 month placements, often in different hospitals. PRHOs work either shift or on call rotas, and perform day-to-day care of inpatients. This includes communication with patients and carers, admitting patients (both routine and emergency), organising investigations, finding and assessing test results, performing procedures such as cannulation and catheterisation, and assisting during operations. PRHOs work under the supervision of more senior doctors at all times.

A breakdown of all PRHO hospital posts by specialty is shown in Figure 4.

Figure 4 Breakdown of PRHO posts in 2004 in England Scotland and Wales, by hospital specialty[136;138;139]



Data on the number of PRHOs in General Practice is not available.

3.2.3 Recent changes to the PRHO year

In August 2005 the PRHO year was replaced by the first Foundation Year (FY1). The primary reason for this change was that the PRHO year had been criticised for lack of a standardised assessment process and lack of a national curriculum[140]; therefore, an organisation called Modernising Medical Careers (MMC) was set up to improve postgraduate medical training and increase accountability. Although there has been a major change to the regulation and nomenclature of the PRHO year, the working practices of new doctors and the problems that they face remain the same.

3.3 Qualitative interview study - methods

The interview study involved semi-structured interviews with 25 PRHOs and 15 of their senior supervisors. Figure 5 (overleaf) shows an overview of the interview study, and this methods section describes the study protocol in detail.

3.3.1 Interview process

I performed one-to-one semi-structured interviews to investigate the views of the PRHOs about their preparedness for practice and about their undergraduate training. Research interviews are a commonly used qualitative technique, and can be further classified as either structured, semi-structured, or in-depth[141]. Structured interviews use a series of predetermined questions with fixed choice answers. Semi-structured interviews use predefined but open-ended questions. In-depth interviews, where the questions are not predefined but are determined by the interviewee's response, are used to investigate complex topics such as barriers to sperm banking before cytotoxic chemotherapy[142]. We selected semi-structured interviews to obtain a consensus on key issues to be included in the questionnaire, and to avoid the prescriptive nature of structured interviews.

Figure 5 Overview of the qualitative interview study

Activity	Time period
Contacted deaneries and medical schools, asked their permission to perform the study, and asked them to recommend lists of PRHOs to participate in interviews	Oct 2004 – Feb 2005
Telephoned list of recommended PRHOs (n=26) and agreed interview times (n=26)	Nov 2004 – Feb 2005
Performed interviews with PRHOs (n=25): asked each PRHO to recommend a senior doctor who had supervised them and who might also agree to participate in an interview	Dec 2004 – March 2005
Contacted senior doctors (n=22)	March 2005 – Aug 2005
Performed interviews with senior doctors (n=15)	March 2005 – Aug 2005
Transcribed and analysed interviews (n=40)	Feb 2005 – Dec 2005

In the semi-structured interviews I used a narrative technique, by asking the PRHOs to describe their recent experiences of looking after patients with cancer (Figure 6). This allowed me to start by asking open questions, but to ask for clarification where necessary, resulting in detailed data. I asked about factors that helped prepare the PRHOs, including any personal experiences (i.e. experiences outside their training), because the aim of the interviews was to gather as many different factors as possible

that might contribute to preparedness. I was concerned that if we did not specifically ask about experiences outside training the interviewees would omit personal experiences, thinking they were not relevant to undergraduate education.

I took advice on the questioning, the data analysis, and the interviewing process from Petra Boynton (a psychologist and author of a text on qualitative research) and Cecil Helman (an anthropologist who runs qualitative research training).

At the beginning of each interview, I explained the purpose of the interviews, explained that the data collected would be anonymous, and took informed consent (Appendix 2.1). Each interview lasted between 20 and 60 minutes. I minimised interruptions from bleeps and phones, was sensitive to the possibility of interviewee stage fright (due to the tape recorder) and embarrassment (due to awkward questions), and avoided teaching and/or counselling the interviewees during the interviews[141;143]. At the end of each interview I offered to keep the PRHO informed of the outcome of the study.

Figure 6 Interview schedule for PRHOs

Interview questions for PRHOs:

1) Think of the last patient* with cancer you helped to look after:
   a) What aspects of the patients' care did you feel well prepared for?
   b) What aspects of the patients' care did you feel unprepared for?
2) What things have helped prepare you for looking after patients with cancer?
3) What things do you think could have helped prepare you better for looking after patients with cancer?
4) Thinking particularly about your oncology teaching at medical school:
   a) How do you think it has helped you since you started work?
   b) Where were the gaps?
5) Is there anything else in your personal experience outside your formal medical training, which you think has helped prepare you for looking after patients with cancer?

*or a recent patient with cancer

3.3.2 Sampling strategy and recruitment

We sampled the PRHO interviewees purposively to cover a range of medical schools, course types, geographical regions, working environments and specialties. The aim of the purposive sampling was to be inclusive and elicit a range of viewpoints.

We invited Manchester, Oxford, Edinburgh and London Postgraduate Deaneries to take part in the study, of whom all accepted. See Appendix 2.2 for the letter of invitation. Deaneries cover geographical areas, so each deanery was responsible for graduates from several medical schools. Thus we were able to sample PRHOs from schools with problem based learning course (Manchester and St Georges), compulsory intercalated degrees (Oxford and Royal Free & University College [RFUCMS]), and a graduate entry course (St Georges). We asked each postgraduate deanery to recommend 6 PRHOs to participate in the study. Imperial and St George's medical schools agreed to assist with recruitment on behalf of the London deanery, but after three months Imperial had not recommend any PRHOs, so we recruited from a third school within the same deanery (RFUCMS).

The exact method of recruitment depended on the individual deanery/medical school: one deanery and two medical schools gave us lists of PRHOs who met our specifications with respect to gender and specialty; one deanery asked the educational supervisors to recommend a list of names; and one deanery publicised the study and waited for the PRHOs to volunteer. In all deaneries, we also accepted PRHOs who had heard about the study from their peers and were keen to volunteer.

The first contact with potential study recruits was by telephone (n=26). All PRHOs were still interested after the telephone call, so we sent them an information sheet (Appendix 2.3), and agreed an interview date by phone or email. Twenty-five out of the twenty-six PRHOs were interviewed.

3.3.3 Data collection and collation

The interviews were tape-recorded where possible, and I took detailed notes including verbatim quotes. One PRHO did not want to be recorded because he did not like the sound of his voice on tape, and one recording was of insufficient quality for transcription due to technical failure. Kath Woolf transcribed the recordings word for

word. I checked all transcripts for accuracy and for clarification of technical terminology. The transcripts and notes were stored in password-protected files, on a University College London (UCL) computer, in line with the regulations imposed by the UCL data protection committee.

3.3.4 Data analysis

The process for data analysis was as follows. Kath Woolf and I read transcripts of the interviews, firstly individually and then together, and identified emerging themes using the constant comparative method[144;145]. Through discussion and re-reading of the transcripts, we reached a consensus on the coding framework. We each subsequently independently coded the transcripts using Atlas.ti software.

In this section I outline the available methods for analysing qualitative data, in order to describe how we selected this method for the analysis. The simplest method is content analysis, in which researchers count the number of occurrences of a predefined concept[146]; for example, content analysis of oncology consultations might involve counting the number of times the patients mention nausea, constipation, anxiety, etc. Content analysis was not suitable for our study however, as we were investigating a topic for which there were no predefined concepts. A method for creating novel coding categories from the data has been described by Schmidt *et al* (2004)[147]:

- Set up coding categories in response to the data. Do this by reading and re-reading the data and discussing it.
- Bring together the categories into a guide. Test the guide by applying it to the data, and revise categories as necessary.
- Code the data by selecting parts of the text which fit each category.
- Use the coded text to bring together 'overviews' i.e. to select all the text for a particular code.
- Select individual cases for in-depth analysis.

The constant comparative method, which is the method we used, is similar to the method described by Schmidt (above), but also involves moving back and forth between data gathering and data analysis[144;148]. The constant comparative method is based upon grounded theory, and involves sampling cases that appear to run counter to the

emerging concepts (called 'deviant cases') in order to enrich the analysis[148]. We found deviant cases within our data for several of our more important themes (see Chapter 4), and used these to refine the themes. It was not necessary or appropriate to sample deviant cases actively because they arose within the data.

The reason we chose the constant comparative method is because it was well described in the literature as a method for analysing semi-structured interviews[145]. The difference between the constant comparative method and the method described by Schmidt *et al* for creating coding categories from the data is one of degree: the basic principle remains that researchers immerse themselves in their data, then categorise it, and finally describe it.

We selected the computer software package 'Atlas.ti' for data analysis, to avoid manual coding, which is time consuming and subject to observer error[149]. This resulted in electronically indexed text so that, although there was a large quantity of data, we could quickly identify that relating to a particular code or theme.

3.3.5 Validity and reliability in qualitative research

A valid test is one that measures what is intends to measure: a reliable test is one that produces similar results in different settings, or when repeated over time. In order to ensure validity we performed the interviews according to guidelines on quality and rigour in qualitative research, which can be found in all standard texts on qualitative research and in published commentaries[150;151]. Figure 7 (overleaf) shows a summary of the guidelines we followed.

We repeated the interviews with a different group of participants, in a process known as triangulation. Triangulation is a method for increasing the reliability and validity of qualitative research[152]. We chose the consultant supervisors of the PRHOs to triangulate the interviews, because they were able to provide a different viewpoint on the same question (of whether the PRHOs were prepared). We performed the consultant interviews to the same protocol as the PRHO interviews, using questions that were as similar as possible (Figure 8).

Figure 7 Guidelines for quality in qualitative research

Guidelines for quality in qualitative research:

- Describe the theoretical framework and methods clearly
- Describe the context of the research
- Describe and justify the sampling strategy
- Perform theoretical or purposive sampling (i.e. deliberately recruit a diverse range of participants who may hold outlying views)
- Describe the data collection process clearly
- Ensure that interview transcripts are checked and are available to reviewers
- Describe and justify the procedure for data analysis
- Ensure more than one researcher repeats the analysis
- Use quantitative methods to test conclusions where appropriate
- Seek out observations that might contradict or modify the analysis (also called negative examples or deviant cases)
- Present sufficient original evidence in the written account (e.g. numbered quotations) to allow the reader to draw their own conclusion

Figure 8 Consultant interview schedule

Interview schedule for consultants

1) Can you tell me about a recent situation involving a patient with cancer*:
   a) when you felt your house officer was well prepared?
   b) when you felt your house officer was poorly prepared?
2) What things do you think help to prepare house officers for looking after patients with cancer?
3) What things do you think could help prepare house officers better for looking after patients with cancer?
4) Have you had any personal experiences, outside your formal medical training (undergraduate or postgraduate), which help prepare you for your work looking after patients with cancer?

* or another similar patient

The PRHOs recruited the consultants in the following way. At the end of each PRHO interview, I asked the interviewee to nominate a consultant or senior colleague who had supervised them and to whom I could ask similar questions. I explained the purpose of this, and reassured the PRHOs that I would not be asking for a personal report on their progress but that my questions would be about PRHOs in general.

20 PRHOs nominated 22 senior colleagues for interview: 20 consultants, one registrar and one GP. I invited these doctors by letter (n=9), fax (n=5), and/or email (n=20) according to the advice of their secretaries. All received information sheets (see Appendix 2.4). 5 PRHOs preferred not to nominate a senior colleague, because they felt there was no-one suitable or no-one who knew them well enough.

We did not perform respondent validation (feeding back the findings to the participants to ask whether they agree with them) because our findings were fed back to all PRHOs in the UK in the form of the questionnaire.

3.4 Questionnaire study - methods

We distributed a questionnaire to all PRHOs in the UK, to elicit their views about their oncology training and their preparedness for practice. The final version of the questionnaire is to be found at the back of this thesis. This methods section describes the design, administration, and analysis of the questionnaire.

The main reason for choosing a postal questionnaire was to emulate the methods of the previous (2000/2001) study of preparedness, so our results would be comparable. Michael Goldacre (the author of the 2000/2001 study) was consulted to ensure that he was in agreement and was not also planning a questionnaire on the 2004 qualifiers.

There are advantages and disadvantages of questionnaire studies, as outlined in Table 9 (overleaf). The most significant concern was a potential low response rate, but we were reassured by the fact that two groups in the UK have consistently achieved response rates over 60% when studying PRHOs[4;62;153].

In order to gain experience in the design and administration of questionnaires, I designed and implemented a questionnaire study of preparedness for advanced life support amongst graduates of our medical school[154]. I also obtained copies of

questionnaires distributed nationally by Chris McManus and internally at RFUCMS by Jonathan Cartledge, and followed the advice in the Association for the Study of Medical Education (ASME) booklet about writing questionnaires for research in medical education[155].

Table 9 Advantages and disadvantages of using a questionnaire to survey PRHOs

Advantages	**Convenience:** There are more than 5000 PRHOs in the UK and a postal survey is a practical and affordable method for reaching them all.
	Continuity: The results will be comparable to previous studies.
	Confidentiality: A postal questionnaire is an impersonal method of asking questions. This should enable PRHOs to be honest about their training, including making criticisms if they want to.
	Objectivity: Questionnaires offer an objective means of collecting information about PRHOs' knowledge, beliefs, attitudes and behaviours.
	Unobtrusive: Questionnaires are less intrusive than face to face or telephone interviews.
Disadvantages	**Unvalidated:** There is no existing instrument for measuring preparedness: The questionnaire will include new and therefore unvalidated questions.
	Response rate: PRHOs are busy and already have lots of paperwork, so the response rate may be low.
	Confidentiality: Some of the issues concerned are sensitive and PRHOs might find it upsetting to write about them, or might be concerned their responses will fall into the wrong hands.

3.4.1 Writing the questions

The questionnaire included five sections: demographics; questions about preparedness for the PRHO year; questions about preparedness for different aspects of caring for patients with cancer; questions about medical school training; and questions about factor which affect preparedness. The questions were determined from the themes that arose in the interview study (see Chapter 4) and the previous literature, as outlined in Chapter 1 (see Table 2 page 28). The use of qualitative data to inform question writing is a recognise as a method for improving question quality[156]. We obtained the permission of Michael Goldacre to include an exact replica of the question he asked in his 2001 survey.

There is evidence that individual attributes of PRHO such as their mental health and their personality may affect their preparedness[62], as discussed in section 1.2.2.3 page 27. Validated measures exist for stress, burnout, depression, and personality, but we could not include them all: this would have doubled the length of the questionnaire. We chose to measure personality, because evidence has shown that personality traits can be used to predict doctors perceptions of their workplace climate[62]. We used the same personality scale that was used in the study demonstrating the link between personality and attitudes to work in doctors, which was an abbreviated version of the 'Big Five' personality scale measuring 5 personality traits (conscientiousness, neuroticism, agreeableness, extraversion and openness)[157] (Appendix 2.5).

We circulated the questionnaire to a group of 8 colleagues to ensure that the questions were clear and appropriate. Two colleagues suggested that respondents may find questions about personal experiences of cancer upsetting, so we included a phone number for the Cancer Backup helpline. We then piloted the questionnaire on 39 PRHOs and final year medical students, to allow the opportunity to talk to potential respondents about the questions and to time how long the questionnaire took to answer.

3.4.2 Distributing the questionnaire

We asked permission from the deaneries (n=21) and the PRHOs' educational supervisors (n=229) to perform the questionnaire study. Two educational supervisors

requested that we also obtain permission from the hospital Research and Development committees, which we did.

We used three different methods for distributing the questionnaire, as follows:

Method 1 - England and Wales

The deaneries told us the names and addresses of the postgraduate education centre (PEC) administrators in each area, and the approximate number of PRHOs attending teaching at each PEC (they could not be precise because of overlap between deaneries). We posted the questionnaires to the PEC administrators, with freepost reply envelopes. We gave the PEC administrators a telephone number and email address for requesting additional blank questionnaires.

Method 2a - Scotland

We posted the questionnaires, in individual envelopes containing a pen and a stamped addressed reply envelope, to the deaneries. The deaneries addressed the envelopes and posted them on.

Method 2b – Northern Ireland

Northern Ireland deanery told us the names and addresses of the PRHOs, and we posted the questionnaires directly to the PRHOs with a pen and a stamped addressed reply envelope.

3.4.3 Sampling strategy

We needed 1000 respondents in order to be powered to detect differences in preparedness of 0.6 (on a scale of 1 to 5) between graduates of different medical schools. The power calculation was performed by Richard Morris (Reader in Medical Statistics), and is reproduced in full in Appendix 2.6. We could not estimate our response rate, because our method of distribution was previously untested, therefore we elected to send the questionnaire to all 5143 PRHOs registered with the GMC for the year 2004/5.

3.4.4 Data collection and collation

Kath Woolf and I entered the data from the questionnaires into an Excel database[158], working in periods of not more than half a day at a time[159]. Each questionnaire had a unique number to avoid duplicate data entry, and each field had a code for 'missing' data[159]. The Excel files were anonymised and password protected. I cleaned the data by random checking and by running frequencies on each response to check for anomalous entries (e.g. 6 in a field where legitimate answers were between 1 and 5).

3.4.5 Data analysis and statistics

I performed Chi squared tests, ANOVAs, t-tests (paired and unpaired), Spearman's rank correlations, factor analyses and univariate and multivariate analyses as appropriate, using SPSS for windows version 12. The assumptions that we made in performing these tests are shown in Table 10.

Table 10 Statistical assumptions

Test	Assumption
t-test	The data is from a normal distribution. There is equal variance within each of the groups to be compared (homogeneity of variance).
Chi squared test	At least 80% of the expected frequencies exceed 5 and all the expected frequencies exceed one.
Linear Regression	Data is from a normal distribution, and the residuals are normally distributed with a mean of zero.
ANOVA	Data is from a normal distribution. There is equal variance within each of the groups to be compared (homogeneity of variance).

Univariate regression calculated the relationship (or correlation) between two variables, for example by predicting PRHOs' preparedness on the basis of how much shadowing they had done. Multiple regression analysis allowed me to use several inter-correlated

variables to predict one outcome variable. In the example of shadowing for example, conscientious PRHOs may have attended for a greater proportion of their allocated shadowing time, therefore it was necessary to use multiple regression to calculate the independent effects upon preparedness (the outcome variable) of both shadowing and conscientiousness (the predictor variables).

I analysed Likert scale data using parametric statistics, as this allowed a wider range of statistical techniques including factor analysis. I checked that the data had a normal distribution before using parametric statistics, and, if the data were skewed, performed extra checks e.g. plotting the residuals and duplicating the analysis using appropriate non-parametric tests.

There is a lack of consensus on whether Likert scales should be analysed with parametric statistics or not [160;161]. Strictly speaking, Likert data are not continuous; the average of 'agree' and 'strongly agree' is not 'agree-and-a-half' [162]. It is common practice however to use parametric methods to analyse Likert scales; in the June 2006 edition of Medical Education there are 9 papers which use Likert or Likert-like scales, of which 6 use parametric statistics in the analysis [163-168] and 3 use non-parametric statistics[169-171]. Statisticians argue that the use of parametric methods for analysing Likert scales is reasonable as long as '*the assumptions are clearly stated and the data is of the appropriate size and shape*' [172].

I found some problems with simply using t-tests and correlation matrices to compare the questionnaire responses, as follows:

- The questionnaire had 18 items about preparedness for different aspects of caring for patients with cancer. Comparing all these variables required multiple significance tests, heightening the chance of Type I error (i.e. finding a statistically significant difference where one does not truly exist).
- The conventional null hypothesis is that all relationships between variables are zero. In the context of my questionnaire however, it was likely that there were relationships between the variables, and that the null hypothesis was not true.

The solution to these problems was to use a factor analysis (the simplest version of which is Principle Component Analysis). Factor analyses recognise that data items

cluster together, and can identify the nature of the clusters. The use of a factor analysis resulted in a much simplified correlation matrix.

3.4.6 Quality issues in quantitative research

This section describes the measures taken to maximise the quality of the questionnaire.

Validity and reliability

I used previously validated instruments in the questionnaire wherever possible (see section 3.4.1 page 64). I used a split half method to test the reliability of the questionnaire, because this is the method most appropriate for questionnaires about opinions[173]. The split half test of reliability was performed in the following way. I analysed first the odd numbered items and then the even numbered ones. The purpose was to see whether there was a correlation between the answers to questions 1, 3, 5, 7...etc and questions 2, 4, 6, 8...etc. I expected that there would have been a correlation, since all the questions were measuring elements of the same construct.

Design issues

There were several factors related to the design of the questionnaire which contributed to its quality. These included:

- **Presentation:** The questionnaire was printed in the Cancer Research UK house colours (blue and pink), on silk paper, with the Cancer Research UK logo on the fist page. The questionnaire was four pages long, was printed on one folded sheet of A3, and was accompanied by an introductory letter explaining the purpose of the study (Appendix 2.7)[174;175].

- **Clarity:** Having 'got to know' the questionnaire recipients by performing the interview study, I was able to use words and phrases that were familiar to the PRHOs. The questions were colour coded (pink for section heading, blue for question, black italics for instructions).

- **Order:** Factual questions about training were on pages one, and the free text responses were towards the end, because complex or threatening questions on page one can discourage respondents[174]. I put the general questions on page one and the

cancer-related questions on pages 2 and 3 (inside pages) to minimise the risk of cross contamination.

- **Response matrix:** To minimise confusion, the format of response matrices were the same where possible, and similar style questions kept together.

Minimalisation of bias

Respondents are sometimes found to answer questions in characteristic ways[173]. For example *'Yea sayers'* simply agree with all statements (also known as the acquiescence effect). To avoid bias due to the acquiescence effect, I phrased some questions in the positive and some in the negative.

Piloting the questionnaire

I performed a form pilot study of the questionnaire to ensure it was clear, inclusive, and unambiguous[176]. The results of the pilot study are described in Chapter 5.

Maximalisation of the response rate

I used incentives, reply envelopes and reminders in order to maximise the response rate.

- **Incentives**: All PRHOs who responded to the questionnaire were entered into a draw to win an iPOD, because in a previous survey of resident doctors in the USA, the response rate was higher when a lottery incentive was included (75% versus 68.2%; $p = 0.09$)[177]. The size of a monetary incentive ($5, $10 or $20) has not been shown to influence response rate from doctors in America[178]. Respondents completed a separate form for the prize draw to avoid their names appearing on the questionnaires (Appendix 2.8).

- **Incentives:** I offered response-rate dependent incentives to the PEC administrators, as follows. If the administrators obtained responses from over 60% of their PRHOs, I sent them a 250g box of Belgian chocolates. If they obtained responses from over 80%, I also entered them into a prize draw to win a case of Moet and Chandon champagne or a Fortnum and Mason hamper.

- **Reply envelopes:** These were stamped rather than freeposted, because in a previous study of haematologists, the response rate for stamped return envelopes

was 38% versus 32% for business reply envelopes (p = .0005)[179]. I included a pen in each envelope.

- **Reminders**: I sent reminders depending on the method of distribution;

  a) *Method 1 – England and Wales:* If the PEC administrators achieved a response rate over 80%, I did not send a reminder (n=18). If they achieved a response rate under 80%, I sent them a thank-you letter (and a box of chocolates if their response rate was 60-80%), and a reminder (n=114). The PEC administrators who didn't return any questionnaires (n=87) received two reminder letters and one phone call. After the phone call, I emailed them the questionnaire asking if they could forward it to the PRHOs. I also emailed the questionnaire to all PECs with a response rate below 60%.

  b) *Method 2a – Scotland:* We asked the deaneries to send three reminders to the non-responders. One deanery was too busy to send the reminders.

  c) *Method 2b – Northern Ireland:* We sent three postal reminders to the non-responders.

3.5 Ethical and legal concerns

University College London (UCL) sponsored both studies, and we registered with the UCL data protection committee. Ethical approval was obtained via the Central Office for Research Ethics Committees (COREC) [180]. When applying to COREC I had to demonstrate that the PRHOs would not be put under pressure to participate in interviews, and would have sufficient opportunity to decline participation by post or email rather than in person. PRHOS may be regarded as vulnerable in research terms: they are not fully autonomous, being dependent on a satisfactory consultant report at the end of the year. PRHOs may also be institutionalised: it has also been suggested that medical schools are similar to *'total institutions, such as prisons, asylums, monasteries'*[181]. These external forces may influence the motivations of the PRHOs to enter into studies, and hence motivation may not be entirely altruistic.

3.6 Discussion

3.6.1 Summary of methods used

I performed one-to-one semi-structured interviews with 25 PRHOs, analysed the findings using the constant comparative method, and triangulated them by interviewing the PRHOs senior supervisors. I turned the emergent themes into a questionnaire, which I piloted, and then distributed to all 5143 PRHOs in the UK in May 2005. The questionnaire asked about demographics; preparedness for the PRHO year; preparedness for different aspects of caring for patients with cancer; medical school training; and factor that affected preparedness.

3.6.2 Strengths and weaknesses of the methods

Qualitative methods are helpful for generating hypotheses, e.g. about factors that affect preparedness, and quantitative methods are helpful for testing these hypotheses. The advantage of qualitative research is that the emphasis is on discovery and on exploring participants' experiences[182;183]. The advantages of questionnaires are that large numbers of participants can be included, and the results are measurable and generalisable. In order to benefit from the advantages offered by both qualitative and quantitative methods, we used both together, which was a strength.

The rigor with which the qualitative research was carried out was also a strength. Some authors have argued that the use of guidelines (as described in Figure 7 page 61) for qualitative research is over-simplistic, and that health-care researchers incorrectly apply quantitative-style criteria to qualitative research[184;185]. I found these guidelines helpful however, especially in the context of being a novice researcher, and would use them again for similar studies.

The questionnaire was distributed using three methods, which precluded direct reminders for all participants. I describe the reasons for using different distribution methods in the following four paragraphs.

Our original intention was to mail the questionnaires directly to the home addresses of the junior doctors and to send four reminders. This method has been successfully used by previous authors[4;181], and the GMC register is freely available. When we contacted

the GMC to ask their permission to use the register in this way however, they informed us that they had reviewed their interpretation of the data protection act, and they could no longer allow the use of the GMC register for research purposes (Appendix 2.9 contains a copy of the correspondence).

According to the terms of the Freedom of Information Act 2000 [186], the GMC were obliged to provide us with data from the public register: however, according to the terms of the Data Protection Act 1998 [187] they could not allow the registration data to be used for contacting doctors directly. The use of the GMC register to distribute the questionnaires was therefore not legally defensible (advice obtained from Sue Long, Member of the Market Research Society and Associate Director of Kudos research).

I asked the deaneries whether they could give us the PRHOs' names and addresses, because I believed that personal mailings were likely to result in the highest response rates. Although one deanery was happy to provide these, the remainder were not, again stating the terms of the Data Protection Act. Three deaneries offered to forward the questionnaires to the doctors' work addresses.

Elisabeth Paice (Dean Director of the London Deanery), who has extensive experience of sending questionnaires to PRHOs, advised us to ask the administrators in the postgraduate education centres (PECs) to distribute the questionnaires. We considered the advantages and disadvantages of this suggestion (Table 11), and because there were significant disadvantages, we decided to post directly to doctors wherever possible, and distribute via the PECs only when there was no alternative. This necessitated using three different methods of distribution in three different regions, as described in section 3.4.2 page 64.

Table 11 Advantages and disadvantages of distributing questionnaires via the postgraduate education centres.

Advantages	Disadvantages
There are approximately 200 postgraduate education centres in England and Wales. This relatively small number would facilitate telephone reminders.	When a group from Nottingham used this method, the response rate was only 33% [188]. Because of the 'middle man' (the postgraduate centre administrators), it is not possible to target reminders specifically at the PRHOs and we cannot be sure that every PRHO has been given the opportunity to respond to the questionnaire.
The postgraduate education centre administrators know the PRHOs personally which might help to increase responses.	Heavy reliance on the good will of the postgraduate centre administrators.
Cheaper postage.	The questionnaire will not reach PRHOs in general practice.

3.6.3 Comparison with previous methods for studying junior doctors

The majority of previous studies of junior doctors have used either semi-structured interviews or questionnaires, as we did. There are, however, a range of other research techniques which have been used successfully to study junior doctors in the past [189-193]. Focus groups have often been used for investigating potentially provocative subjects, but the difficulty of assembling a group of PRHOs in one place make these, and other group methods such as Delphi or nominal group techniques, less practical. Analysis of existing written material has been used for investigating PRHOs' working practices, where suitable written material exists. Direct observations of practice are useful for measuring objective preparedness, and have been successfully used in the past for studying junior doctors, but the necessity of obtaining consent from all patients concerned has made this type of study impractical [194]. If performing this study again I would use the same methods.

3.7 Conclusions

The investigation for this thesis employed a combination of two tried and tested methods for studying junior doctors: the semi-structured interview and the questionnaire. The combination increased the validity of the thesis conclusions. The major limitations were the inconsistencies in the distribution methods and hence the limited ability to send reminders.

Chapter 4. A qualitative study of preparedness in Pre Registration House Officers

'What I say to you is: 'Be prepared.' And I don't mean it in the Boy Scout sense.'

Agatha Christie, *Clocks,* 1963

Summary

PRHOs felt most prepared for recognising and diagnosing cancer and for communication skills, and least prepared for palliative care, answering patients' questions, and radiotherapy and chemotherapy. Consultants and PRHOs agreed about areas of greatest and least preparedness. The following factors may affect preparedness for cancer care: meeting patients with cancer; training in oncology, palliative care and communication skills; feeling supported at work; being more mature or having more 'life experience'.

4.1 Introduction and context

A survey by Goldacre *et al* (2003) found that 42% of PRHOs disagreed with the statement *'My experience at medical school prepared me well for the jobs I have undertaken so far'*. There is limited evidence however to show how PRHOs interpreted this statement [195]. There are no nationally accepted standards for preparedness for the PRHO year [23], and there is no evidence about whether PRHOs view their lack of preparedness as a serious problem. It is not known what, if anything, PRHOs feel would help to prepare them better. It is also unclear whether feeling unprepared is the true opposite of feeling prepared [48].

In light of the unanswered questions identified in the previous paragraph, I felt a qualitative exploration of PRHOs' use of the words 'prepared' and 'unprepared' should be performed. This chapter describes the results of a study involving semi-structured interviews with 25 PRHOs from around the UK, asking about how prepared they felt for looking after patients with cancer. The methods are fully described in Chapter 3. This qualitative study focused on the care of patients with cancer, but we anticipated that the results would be relevant to other aspects of junior doctors' preparedness.

As described in section 3.3.5 page 60, I triangulated the interview findings, to increase the reliability and reproducibility of any conclusions. I did this by interviewing a group of the consultants who supervised the PRHO interviewees. I hoped the triangulation would allow me to explore some of the reasons for the differences that have been previously described between objective and subjective measures of preparedness [46;49].

In this chapter I describe the results of a qualitative study of junior and senior doctors' use of the words 'prepared' and 'unprepared'. I describe first the results of the PRHO interviews, then the results of the consultant interviews, and finally perform a comparison.

4.2 Results of PRHO interviews

4.2.1 Participants

I approached 26 PRHOs and all 26 agreed to be interviewed. One of the 26 could not be contacted by phone on the agreed interview date, and is considered to have declined to participate. Therefore 25 out of 26 PRHOs agreed to be interviewed (a 96% response rate).

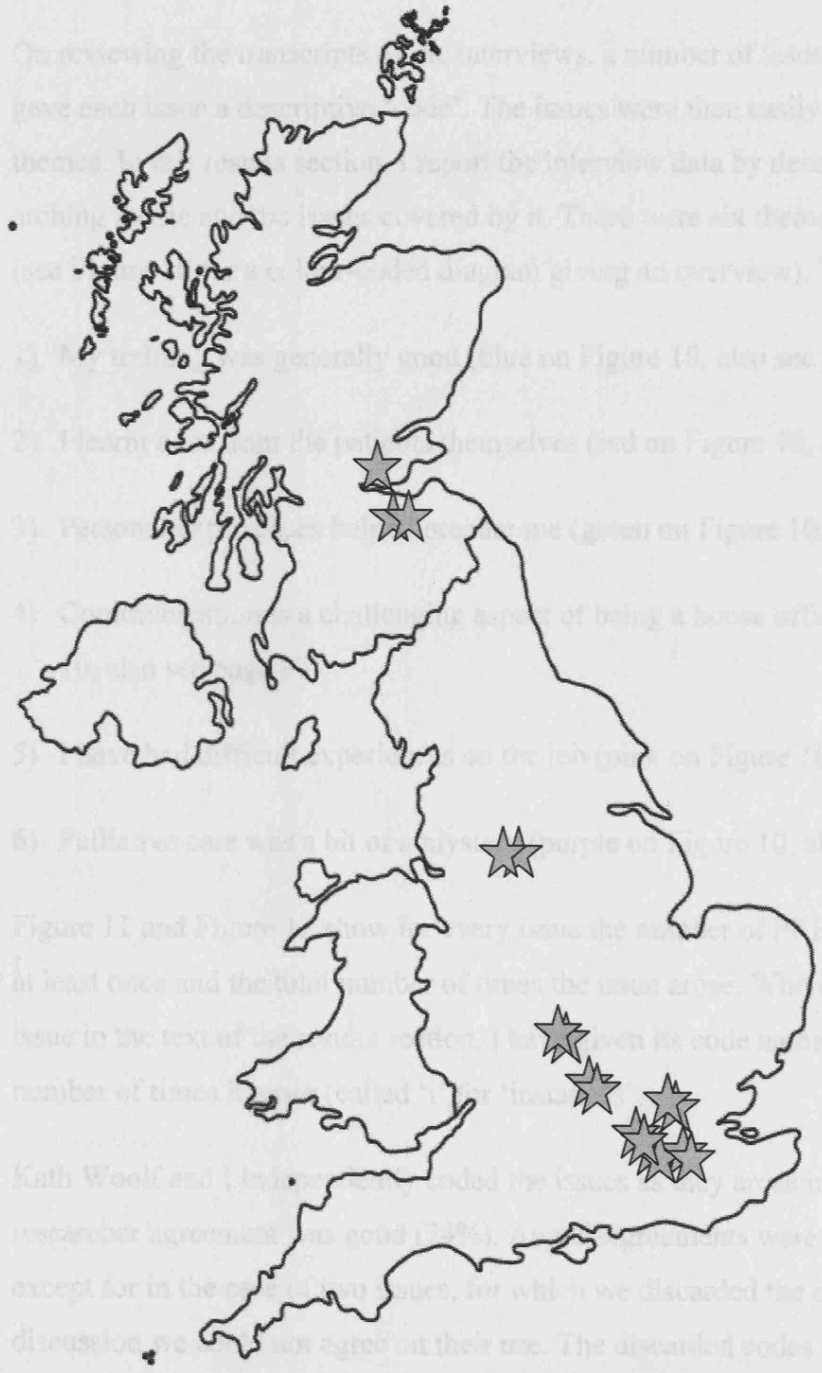
The PRHOs went to the following seven medical schools: Oxford (n=6), St Georges (n=6), Edinburgh (n=4), Dundee (n=1), Leeds (n=1), Manchester (n=4) and RFUCMS (n=3). These included a graduate entry course (St Georges), and courses with compulsory intercalated degrees (Oxford and RFUCMS). There was a representative distribution by location (Figure 9), gender, and medical and surgical specialties (Table 12).

Table 12 Characteristics of the PRHOs

Location	England 80% (n=20), Scotland 20% (n=5)
Gender	Female 64% (n=16), Male 36% (n=9)
Specialty	Medicine 52% (n=13), Surgery 44% (n=11), General practice 4% (n=1)
Course	Problem based learning* 32% (n=8), Graduate entry 24% (n=6)

*** Course which included some elements of problem based learning**

Figure 9 Geographical distribution of the hospitals where the PRHOs were interviewed



4.2.2 Issues and themes

On reviewing the transcripts of the interviews, a number of issues arose repeatedly. We gave each issue a descriptive 'code'. The issues were then easily grouped into six themes. In this results section, I report the interview data by describing each over-arching theme and the issues covered by it. There were six themes covering 40 issues (see Figure 10 for a colour-coded diagram giving an overview). The 6 themes were:

1) My training was generally good (blue on Figure 10, also see page 83)

2) I learnt a lot from the patients themselves (red on Figure 10, also see page 88)

3) Personal experiences helped prepare me (green on Figure 10, also see page 92)

4) Communication is a challenging aspect of being a house officer (orange on Figure 10, also see page 97)

5) I have had difficult experiences on the job (pink on Figure 10, also see page 102)

6) Palliative care was a bit of a mystery (purple on Figure 10, also see page 105)

Figure 11 and Figure 12 show for every issue the number of PRHOs who mentioned it at least once and the total number of times the issue arose. Where I have mentioned an issue in the text of the results section, I have given its code name, and stated total number of times it arose (called 'i' for 'instances').

Kath Woolf and I independently coded the issues as they arose in the text. Overall inter-researcher agreement was good (74%). Any disagreements were resolved by discussion, except for in the case of two issues, for which we discarded the codes because after discussion we could not agree on their use. The discarded codes were; *'I felt less unprepared'* and *'Dealing with uncertainty'*.

Figure 10. Themes and issues from the PRHO interviews

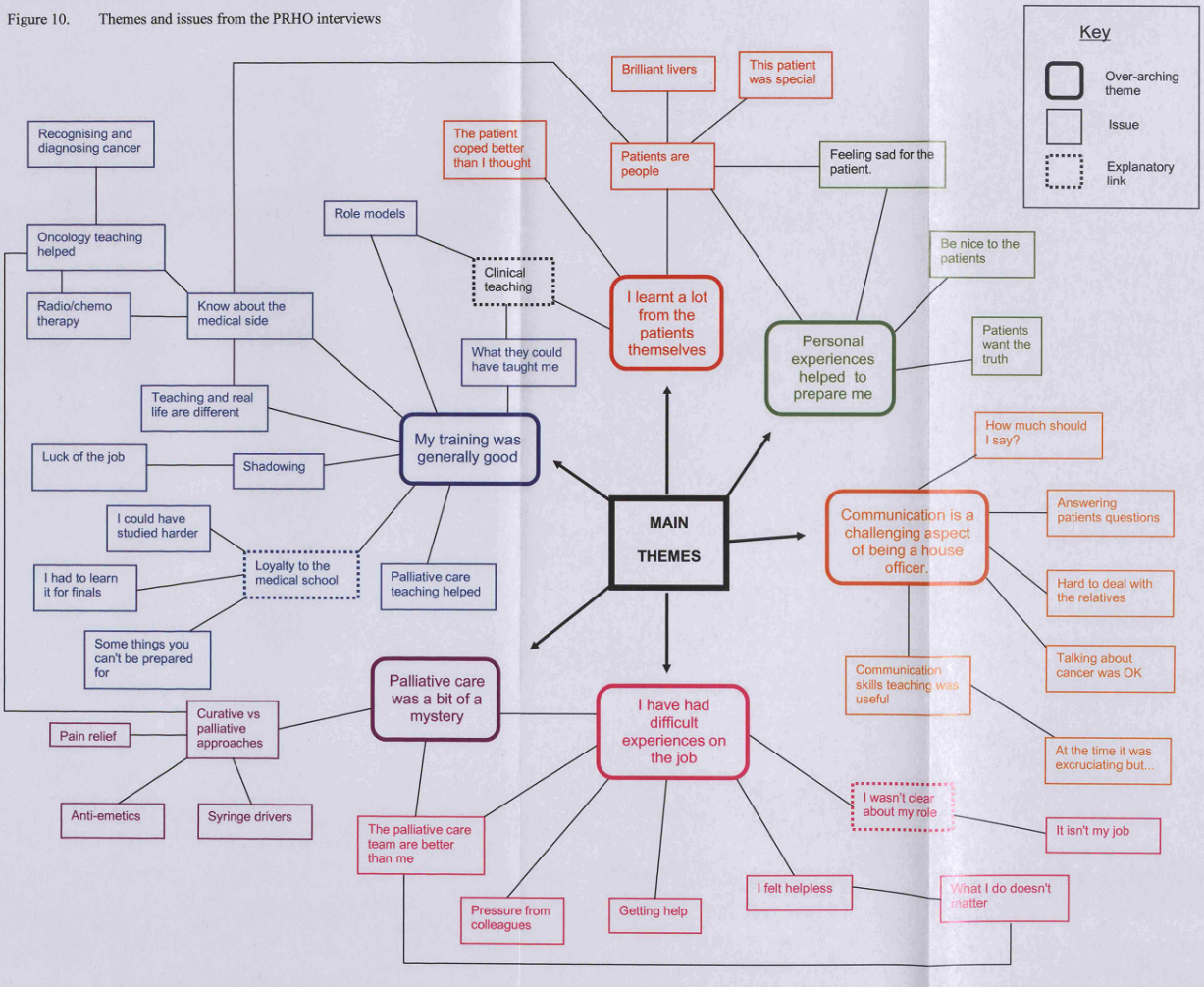
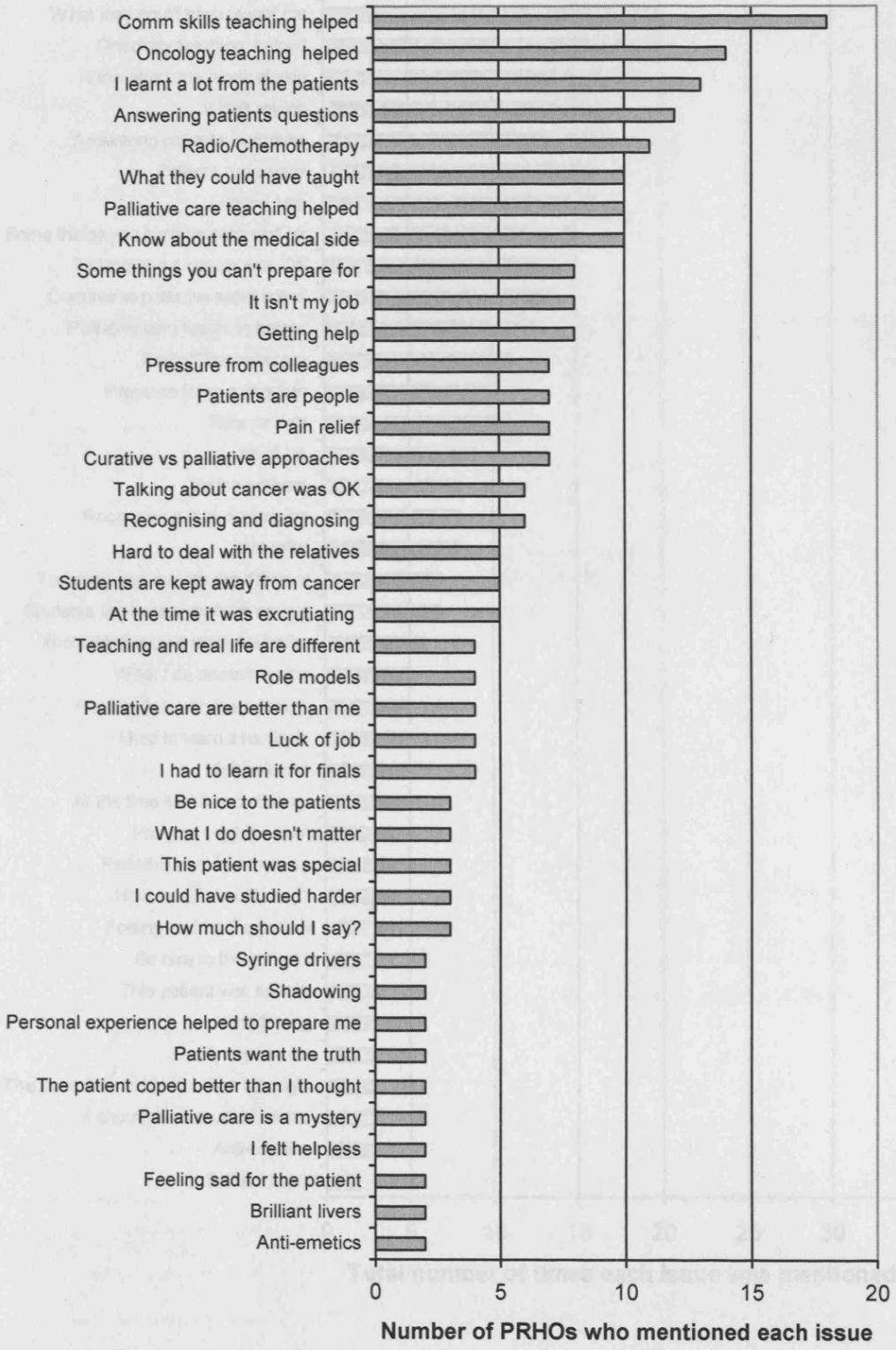
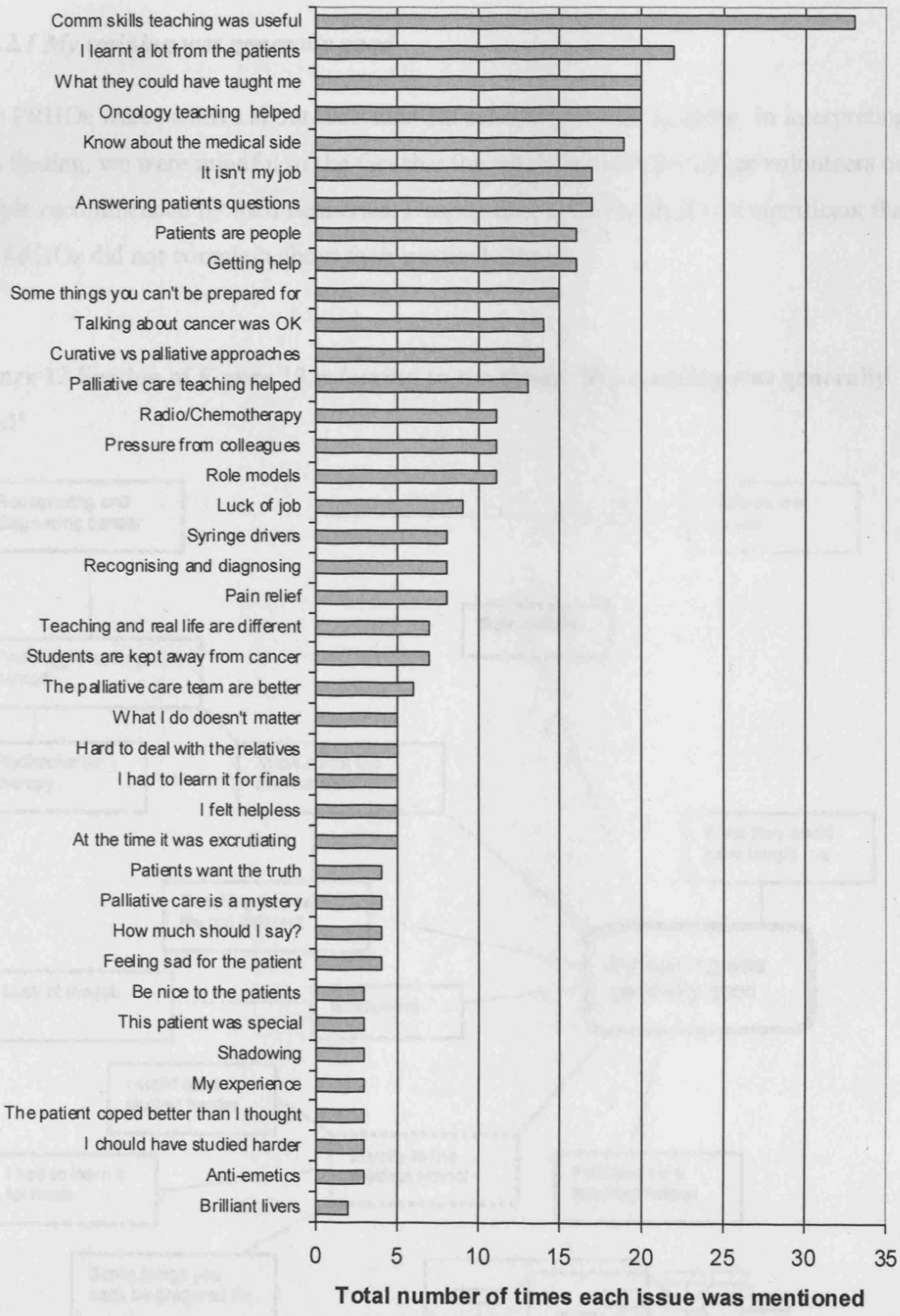


Figure 11 The number of PRHOs who mentioned each issue



The issues here are referred to by the descriptive 'code' names given to them.

Figure 12 The total number of instances of each issue (i)

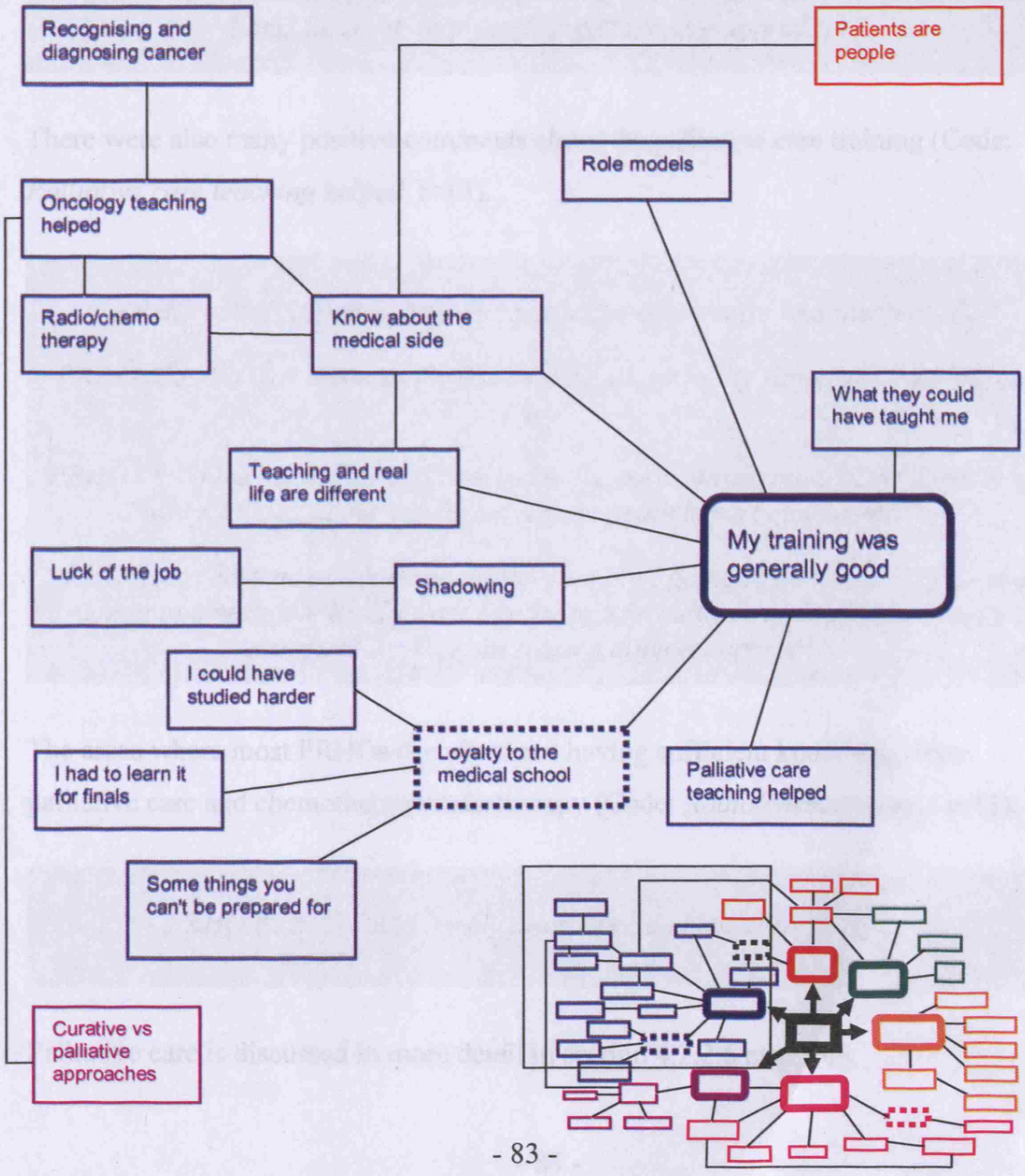


The issues here are referred to by the descriptive 'code' names given to them.

4.2.2.1 My training was generally good

The PRHOs were positive about their medical schools and their training. In interpreting this finding, we were mindful of the fact that the interviewees were either volunteers or people recommended by their deaneries. Despite this, we feel that it was significant that the PRHOs did not complain about their medical schools.

Figure 13 Section of Figure 10 referring to the theme 'My training was generally good'



PRHOs said their oncology training had been helpful (Code: *Oncology teaching helped*, instances of code (i) = 20). In particular, PRHOs said they felt well prepared for the medical side of patient care (Code: *Know about the medical side*, i=19) and for recognising and diagnosing cancer (Code: *Recognising and diagnosing cancer*, i=8).

PRHO #15: "We did oncology at the end of the fourth year....I think it probably covered most of what we needed to know"

PRHO #21: "[Oncology] was one of my best firms actually"

PRHO #3: "I feel lucky to have done an oncology attachment"

PRHO #19: "I felt perfectly well prepared to think to myself 'well this is very likely to be cancer'".

PRHO #10: "I think the medical side of it was kind of, the diagnostic side and the things like that, that you feel quite well prepared for"

There were also many positive comments about the palliative care training (Code: *Palliative care teaching helped*, i=13).

PRHO #10: "Spending time at a palliative care centre was invaluable"

PRHO #13: "It was about as perfect as it could get really [laughs] for preparing us"

PRHO #8: "One particular brilliant palliative care consultant ...sticks in my mind when talking about you know, a good death is part of a good life"

PRHO #10: "Instead of thinking: 'Right what am I going to do about it? How am I going to investigate it? How am I going to take cultures and work out what's going on?'.....You just learn a different approach"

The areas where most PRHOs described not having sufficient knowledge were palliative care and chemotherapy/radiotherapy (Code: *Radio/chemotherapy*, i=11).

PRHO #22: "I could barely pronounce a chemotherapy drug."

Palliative care is discussed in more detail in section 4.2.2.6 page 105.

The PRHOs expressed loyalty to their medical schools, taking the responsibility for any lack of preparedness upon themselves rather than blaming their teaching. Three PRHOs said they said they could have studied harder (Code: *I could have studied harder, i=3*), and four said that their learning had been motivated primarily by assessments, not by what would help when they started work (Code: *I had to learn it for final, i=4*).

PRHO #23: "I don't think they could prepare us any better"

PRHO #22: "I think we were probably as well prepared as we could have been"

PRHO #12: [When asked what could have been done to prepare him better] "Er, probably studied more so that I would know more"

When we asked the PRHOs to describe situations when they felt unprepared, they often said they felt that there were some things that training just could not prepare them for (Code: *There are some things you can't be prepared for*, i=15).

PRHO #10: "The problem is, I don't think medical school could ever prepare you for the middle of the night with a patient..... No matter how hard people try and prepare you for it, even if they talk you through the scenario ten times... You're never going to be in the situation as a medical student with someone who's crashing and you have to put a venflon in them"

PRHO #11: "It's more of a sort of wishy-washy type of general human being things which we missed out on, but that comes with experience and I don't know whether you could get that at medical school, to be fair".

There was one exceptional case; one interviewee was generally negative about her preparation at medical school. However, she gave quite a specific reason for this, i.e. that she knew about the medical side of patient care but was not prepared for the social side. Although she was alone in the strength and absolute nature with which she expressed this opinion, the topic was mentioned by other PRHOs (negative cases of code: *Know about the medical side*, i=5[*]).

[*] As explained in section 3.3.4 page 46, studying sections of text which appear to run contrary to commonly occurring themes forms an important component of the analysis. These sections are called deviant or negative cases.

JC: "What I want you to do is um, think of a patient on your firm um, who had cancer that you helped to look after recently. And um, tell me what parts of caring for that patient you felt well prepared for?" PRHO #16: "That I felt prepared for?" JC: "Yeah, well prepared" PRHO #16: "It's kind of tough because I don't think from medical school you're really prepared for <u>any</u> patient with cancer. You're taught about the pathology, the investigation, how to diagnose and to treat. You're not really taught how to deal with the, the whole social aspect of it, or how it really does affect people and their families and things like that. So when you're actually faced with a patient that you have to care for, um, I don't think you are prepared very well.

When I asked the PRHOs to comment specifically on their oncology training, although many interviewees said this had been helpful, seven PRHOs said that they had had little or no oncology training or that it had been fragmented (Negative cases of code: *Oncology teaching helped*).

PRHO #13: "We were never given any formal teaching in oncology per se"

PRHO #25: [When asked to comment on her oncology training] "I'm afraid there's a vacant expression of 'errr'...[laughs]" JC: "So you didn't really have any oncology teaching?" PRHO #25: "No. I think we had one half hour lecture on bowel cancer."

PRHO #10: "I think our oncology was very divided up. It sort of came under respiratory slightly and came under GI slightly and it sort of came up in lots of places".

Eight PRHOs said that the best way to improve oncology teaching was to have a compulsory oncology attachment.

PRHO #16: "have maybe a compulsory attachment to you know, maybe two weeks on oncology or something"

PRHO # 7: "everyone to do some oncology"

The PRHOs also made some comments about the style and type of teaching they had received, and how it could be improved (Code: *What they could have taught me*, i=20). Examples included that medical students should spend more time on the wards, have more responsibility, or work as nurses for a short time. Three of the PRHOs mentioned

that they had shadowed a house officer before starting work, and that this had been useful (Code: *Shadowing*, i=6).

PRHO #9: "I think you get a better grasp of um, general disease processes if you spend a longer period of time in one particular place"

PRHO #11: "If you look at the student nurses, you'd say that they actually have a routine, they have a regime and they have to come to whatever shift they're on"

PRHO #20: "If as medical students we worked with a nurse for a week on an oncology ward, or a palliative care ward, or any ward to be honest actually... generally it would help".

The PRHOs noted that there was a lot of luck involved in medical school attachments, for example it was helpful if they had been a student on the same firm where they worked a house officer (Code: *Luck of the job*, i=9).

PRHO #13: "I think I was lucky as well being a student on this firm that I'm on now"

PRHO #18:" everyone's clinical experience at university is different"

Time on the wards or clinical teaching was a recurring theme in the interviews. There were two reasons why the PRHOs valued time on the wards: firstly exposure to patients (covered in section 4.2.2.2 overleaf); and secondly exposure to senior doctors who acted as role models. Within the interview transcripts there were 8 descriptions of positive role models and 3 descriptions of negative role models (Code: *Role models*, i=11).

PRHO # 9: "The biggest preparation is spending time on the wards and seeing a good consultant doing it day in day out"

PRHO #17: "Just observing more senior oncologists, the way they interact with patients. Because you're sometimes not sure how to react around patients who are absolutely devastated... So it's a nice idea to see how other people deal with it".

PRHO #2: "Somebody's biopsy result was told to them just like that...then the consultant just swept out and the entourage left with them and the patient was just left on their own"

The commonest negative comment the PRHOs made about their teaching overall was that when they started work they found that teaching and real life were different (Code: *Teaching and real life are different*, i=7). Partly this was due to an information mismatch: the information they studied at medical school was not the same as the information they needed to be successful PRHOs. It was also because they did not experience either continuity or responsibility as students.

PRHO #17: "And so you're prepared in terms of like, revising for exams, but not so much in just telling someone. It's all very well learning the prognosis like 'one in a hundred will have this', and it's quite a lot different when you're trying to explain it to patients."

PRHO #11: "You've got a couple of hours here, and then you've got a lecture there... it doesn't actually give you any idea of the ward running"

PRHO #6: "It's almost as though what we were examined on in medical school is what we'll need when we're registrars but not ... what we're going... what we need to know to do our jobs properly"

4.2.2.2 I learnt a lot from the patients themselves

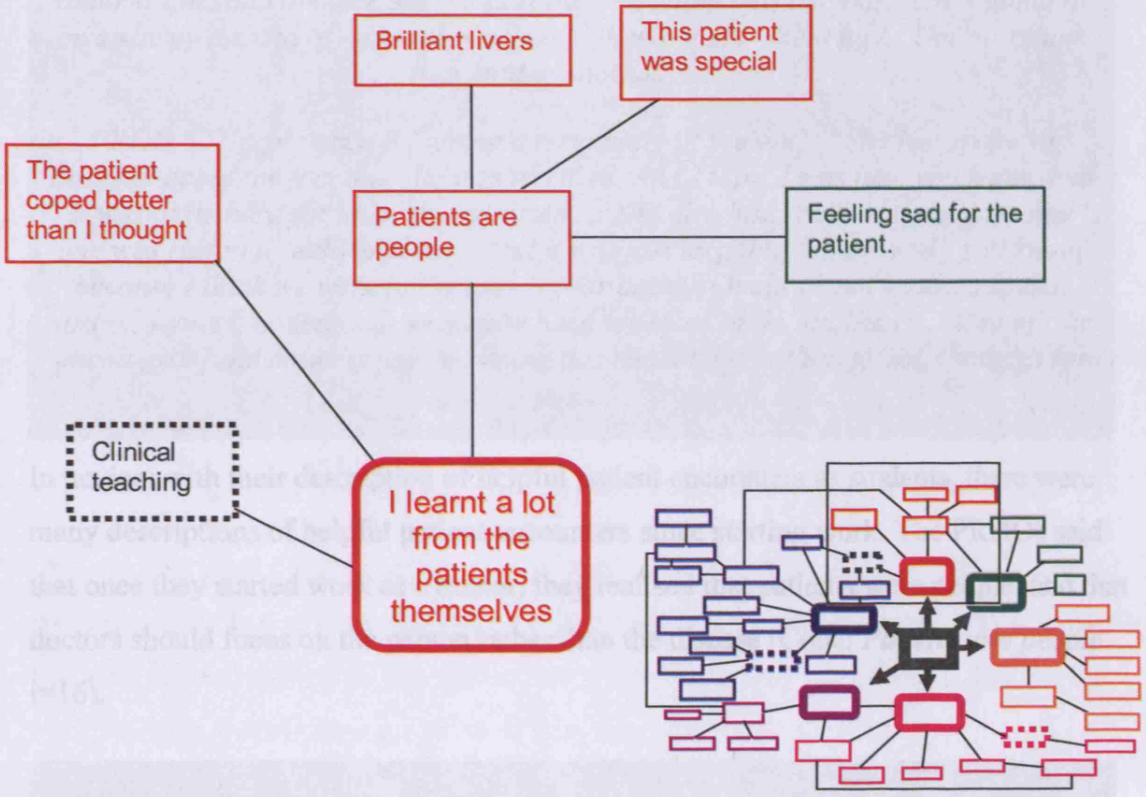
The PRHOs valued exposure to real patients during their training (Code: *I learnt a lot from the patients themselves*, i=22). These comments tied in with their suggestion that they should spend more time on the wards, described above in section 4.2.2.1.

PRHO #13: "it's just more exposure of the student to patients who have got cancer"

PRHO #12: "I think patient contact helped"

PRHO #17: "It was really good because we did ... a day in surgery with the rapid-access breast clinic. Like we would have patients who would come in in the morning and have their mammogram, biopsies and things and be told like later on in the afternoon and things. And I thought that was really good because we saw the patients, saw them all the way through the process."

Figure 14 Section of Figure 10 referring to the theme 'I learnt a lot from the patients themselves'



Although most PRHOs valued patient exposure, three PRHOs had had upsetting experiences related to meeting patients when they were a student.

> *PRHO #23: "I remember I saw a patient when I, I was in third year and I saw a patient in [gastro-enterology] who later on died, and I was having nightmares about it for ages afterwards".*

One PRHO (who did not want to be taped) described a situation where he had been sent to talk to a 40 year old patient who only had a few weeks to live. The patient got very angry, and sent him away. One PRHO described two contrasting experiences: The first time she met a terminally ill patient, she was not debriefed, and hence found it upsetting. The second time she met a terminally ill patient, the consultant acknowledged that the students might get upset, which helped.

PRHO #22 experience A [seeing a new patient with metastatic cancer]: "I would just sort of think 'oh my god, my God, my God, I can't believe it', do you know? They'd just left it for so long, and examining them was like 'and another lump, and another one, and another one' ... and the consultant was like this, 'she's going to be away by the end of the week you know, that's it, she's that bad.' Um, so I think that kind of shocked me."

PRHO #22 experience B [seeing a terminally ill patient]: "She just spoke so honestly about the fact that she was terrified. And I think I was just, you know, and it was quite hard for us to sit and listen.... She also had really bad shingles and um, was just in a really bad way. And it was just us going 'oh my god', you know, because I think we were in the fourth year and just hadn't been exposed to that sort of, I guess, honesty...It was quite hard for some of the students .... One of [the oncologists] did actually say 'we know this could trigger things, like, thoughts for you'."

In tandem with their description of helpful patient encounters as students, there were many descriptions of helpful patient encounters since starting work. The PRHOs said that once they started work as a doctor, they realised that patients were people, and that doctors should focus on the person rather than the disease (Code: *Patients are people* i=16).

PRHO #1: "letting someone's illness enter the context of their life and making the best decision for them is probably the most fundamental thing learnt on the job, as opposed to just treating illness as something to be treated"

PRHO #4: "you can't say 'it's just another acute coronary syndrome, it's just another whatever'... you have to get into the case a lot more"

PRHO #7: "You just have this artificial view that everyone with cancer is really depressed and you know, you have these, you know [laughs], you have these kind of stereotypical views whereas I think if you actually get to chat to people then you can sort of see that everyone has very different views."

When describing this transition from seeing patients as diseases to seeing patients as people, several of the PRHOs told anecdotes about particular patients. It was as if they had met a 'special' patient, who taught them how to behave around patients with cancer.

PRHO #11: "she was the most jolly woman you've every heard in your life. Her laugh was just the loudest on the ward. So from a general perspective I suppose it was quite easy to talk to her and be very open and friendly with her, because she was very you know, easy to talk to... if I hadn't got on with her as well as I did, I think it would have been very difficult to cope."

Two PRHOs described patients with cancer as providing an opportunity for students to view physical signs (Code: *Brilliant livers*, i=2). The interviewees therefore described two contrasting views of patients with cancer, either as 'brilliant livers', or as 'real people'.

PRHO #2: "[Patients with cancer] are not having loads of treatment usually. Um, they're usually a bit bored and have brilliant signs."

One explanation for these contrasting views of patients is that students/PRHOs go through a transition at some time during their training and become more patient centred. Some PRHOs described this transition happening when they started work and had the opportunity to get to know the patients in more depth.

PRHO #1: "I felt I probably did a patient or two badly in the past ...it's, it's getting better. But I must admit, this is just because, this is just based on this current patient that things are getting better. And he's actually an incredible man ... I don't what it would be like if it was a very difficult patient .... I feel almost in a way I've been helped by this one."

The PRHOs clearly felt that they needed exposure to patients with cancer. However there were some PRHOs who said they thought that patients with cancer were kept away from medical students (Code: *Medical students are kept away from cancer patients*, i=7). They said that this was either because of reluctance on their teacher's part, or an attempt on the teacher's behalf to protect the patients.

PRHO #22: "they don't send five students to go and look at a cancer patient"

PRHO #25: "I think they try and keep students away from cancer...especially older consultants feel that students shouldn't have to be around that sort of thing."

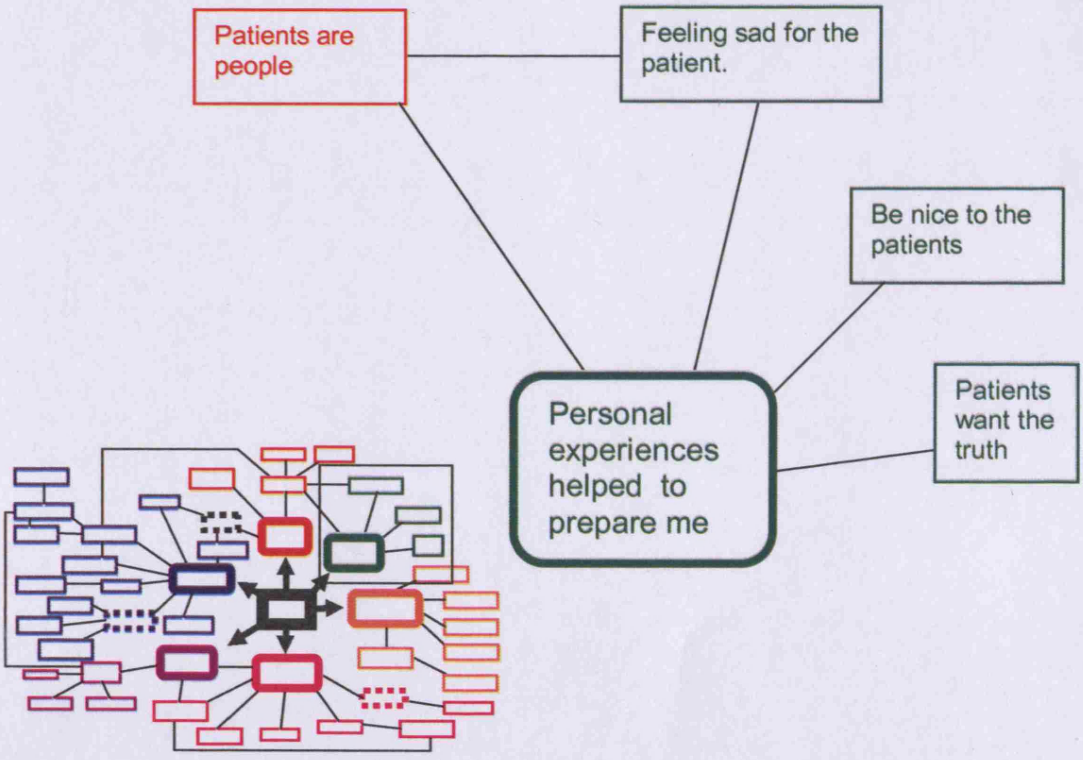
PRHO #3: "Almost as if patients with cancer were a different breed"

The PRHOs did not say that patients with cancer avoided medical students.

4.2.2.3 Personal experiences helped prepare me

21 out of 25 PRHOs had had a personal experience that they said had helped prepare them for their work.

Figure 15 Section of Figure 10 referring to the theme 'Personal experiences helped prepare me'



Two of the PRHOs spontaneously mentioned that it was their personal experiences, not their training, which had prepared them for looking after patients with cancer.

JC: "Was there anything in your training which helped you?" PRHO #18: "It's not my training. It's personal experience.... My Dad has multiple myeloma, um, my Mum had high, er, high grade Non-Hodgkin's Lymphoma... Dad's just had a second stem cell transplant. So you learn to sort of deal with it."

The remaining 23 PRHOs, who did not spontaneously mention their personal experiences, were all asked directly about these. This was the last question in the interview. The table covering the next 2 pages describes the PRHOs' personal experiences, and what they learnt from them. The PRHOs experiences were very variable, from a relative dying from cancer, to a relative having a colonoscopy. The PRHOs described how they had used their 'outside experience' knowledge in their life as a doctor. For example, one of the PRHO described how he tries to remember that although he might be hungry because he missed lunch, the patient's problems are more pressing. Another described how her experiences helped her know what questions relatives might ask.

Table 13 PRHOs' personal experiences and what they have learnt from them

The PRHOs' personal experiences	What they have learnt
"having known relatives who um, who died and you know, things being handled not so well"	*"you remember that this is someone's relative then you think more carefully about it"*
"My grandad died last week"	*"The key is to be open about things"*
"One of my family members has been sort of going through the whole colonoscopy-type investigation thing"	*"It's pretty disgusting... I wouldn't order a colonoscopy now unless they actually really need it [laughs]".*
"In my culture....the relatives get told the diagnosis first"	*"it works in a strange sort of way"*
"[I have had] friends who have lost relatives, who um, maybe would talk much more openly than a relative of a patient might to me about how they've been feeling"	*"that relatives would sometimes rather that you just leave them in peace for a bit, and then when they're ready to ask you a question they will come to you and ask you"*
"My grandfather died of a brain tumour. Very slowly, when I was eleven."	*"You understand how the family must be feeling, you understand how frustrated the patient is"*
"I come from a medical family"	*"so the whole idea of being sick, dying, medical treatment being sometimes quite aggressive and invasive um, is all you know, normal to me"*
"I guess if I were to pick on one thing I [laughs] I don't know if I can say this, I have a fairly difficult father in that you know, you know, it wasn't that easy, he's quite difficult"	*"you get good at talking about problems... you're trying to convince him to do something that he desperately doesn't want you to do, you know, go to a party or whatever".*
"My grandfather had .... left ventricular failure... [He was] someone who... wanted to, sort of give up right now"	*"It makes you realise what the family are dealing with and also it helps you look upon it in a much more sensible light than as the doctor who wants to dive in and do everything"*
"My mother runs a nursing home, so I have worked in nursing homes since I was 14"	*"I have been very aware of death since an early age. Um, I am not afraid of it, I am not afraid of talking about it".*
"one of my grandparents had oesophageal cancer but it wasn't found until, er, post mortem"	*"she was just ill and we didn't know why.... not always straightforward presentations I suppose".*
"my father's got lung cancer um, and I've, and my grandfather had bowel cancer and skin cancer and my aunt has bowel cancer"	*"It does help me when I'm talking to relatives... I know what kind of, what kind of questions they might want you know, to ask, but they might feel that they can't ask. ...so they're not going to be waking up in the middle of the night... wondering whether they're going to be in horrific pain"*

The PRHOs' personal experiences	What they have learnt
Worked as a hospital auxiliary	*Very comfortable with hospital environment*
"A few people in my family have had it"	*I sort of understand when you get the relatives and things and they're always frustrated and coming up to you"*
"my grandfather died of oral cancer"	*"my Dad felt um, he was, when my grandfather was having chemotherapy and radiotherapy to the mouth, the, they were never really told um, what it would entail.. and so I think that's just emphasised the fact that you need to like, make sure that family members and the patients as well understand exactly what's going to happened to them". JC: Do you think it's affected how you talk to people now?. "Definitely. I think I always have more time for families".*
"my Dad has multiple myeloma... my Mum had high, er, high grade Non-Hodgkin's Lymphoma"	*"you know what they'll be thinking.... And it's not really the medical side of things, it's the psychosocial things is often more important to them than, than the medical side."*
"my Mum had breast cancer"	*"makes me a bit nicer to them... it makes me think 'well hang on a minute, I'm, I may be a bit hungry because I haven't had breakfast you know, I haven't eaten today, but this poor woman is dying of whatever cancer it is, and I should you know, put her first".*
"reading books that help you understand the human condition"	*"helped prepare me"*
"I had a friend who um, whose parents were both diagnosed with cancer"	*"Before they told me it's like 'it won't happen to you"*
"some of my family have died"	*"I think having someone die generally can make you quite a sympathetic person"*
"My nan developed a pleural effusion... they were like ....'ooh she's only got a few weeks to live'. Well that was 2 years ago"	*"I would never ever, ever ever tell someone that I thought there was something big and serious going on until I knew more"*

There is evidence from these interviews that some medical students tend to depersonalise patients. This can be seen from the PRHOs descriptions of their realisation that patients are, in fact, people, which could be called 'un-depersonalisation'. For example: *'letting someone's illness enter the context of their life and making the best decision for them is probably the most fundamental thing learned on the job, as opposed to just treating illness as something to be treated'*. And also *'one of my family members has been sort of going through the whole colonoscopy-type*

investigation thing...I wouldn't order a colonoscopy now unless they actually really need it'.

Descriptions of 'un-depersonalisation' were found when PRHOs talked about their personal experiences outside their training, and when PRHOs talked about starting work. This suggests that when doctors are in positions of responsibility they perceive patients in a more personal and intimate light than when they are students. They get to know the patients better, and the patients become 'special' patients, as described in section 4.2.2.2.

Although most PRHOs had learnt from their personal experiences, there is a negative case to illustrate this theme. One PRHO had a personal experience that she described as having hindered her training.

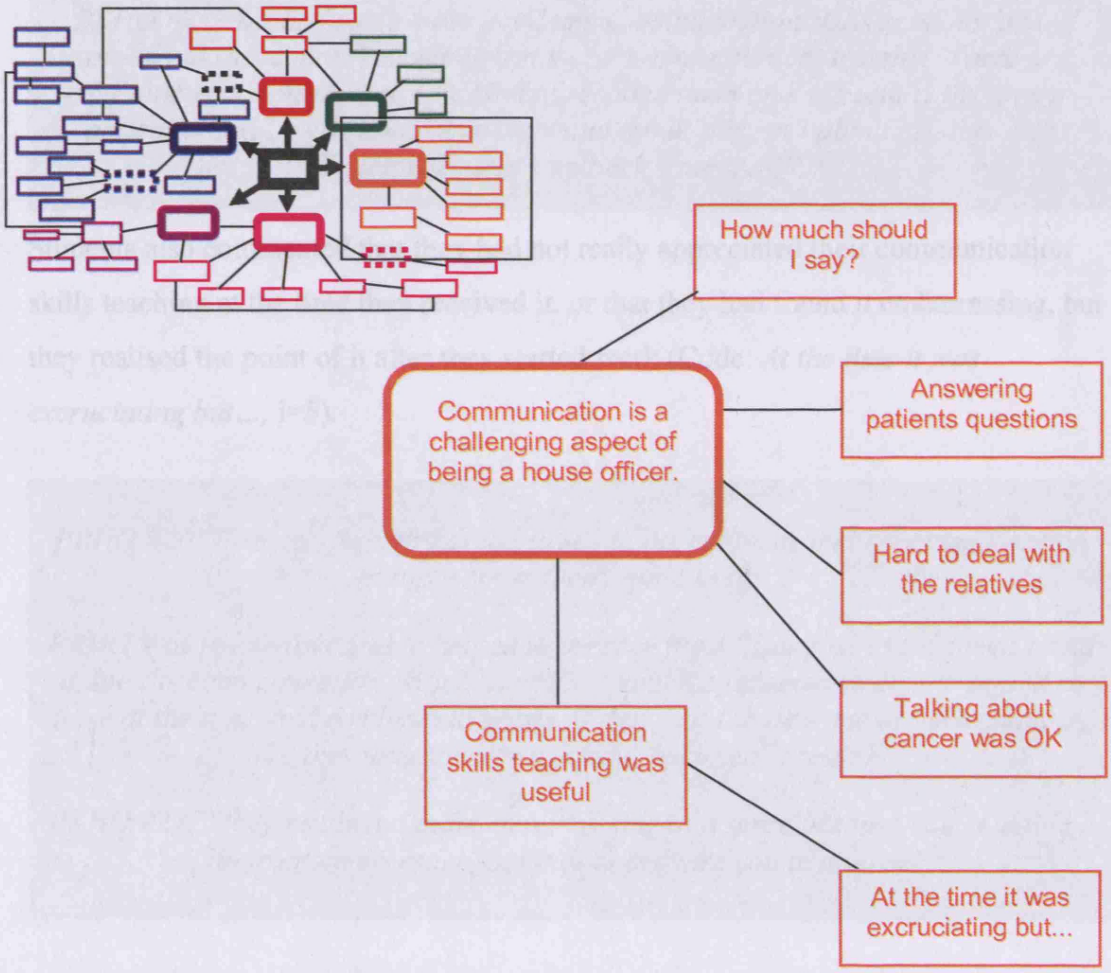
PRHO #22's personal experience	What she found hard about it
"half my grandparents have died of cancer"	*"I think that makes it more difficult than actually helps...I'm dreadful with death...I can talk to patients about cancer and I can do that...but to actually sit and listen, it's like I'm listening to my family being told"*

As a result of this experience, PRHO #22 said that she found it difficult to watch bad news being broken to patients, and felt that she had to cut herself off and think about something else to avoid becoming upset.

PRHO #22: "I hate listening to people give people diagnoses and I, particularly cancer diagnoses for some reason and I sit and look shut off and I stand in the background...it's like I'm listening to my family being told. And I'm standing at the back and I go, and I'm sort of shocked and I'm going 'it's really nice weather today' and you know, and I can feel myself just thinking 'I don't want to listen, I cannot listen to this'".

4.2.2.4 Communication is a challenging aspect of being a house officer

Figure 16 Section of Figure 10 referring to the theme 'Communication is a challenging aspect of being a house officer'



When asked what helped to prepare them, the PRHOs commonly brought communication skills training into the discussion (Code: *Communication skills teaching was useful*, i=33). Although undergraduate training in communication skills is generic, not cancer specific, all oncology specialists receive postgraduate training in communication skills.

PRHO #24: "Well prepared in the sense of communication skills. We've done quite a lot of that, so I felt I was able to talk about the cancer without um upsetting them or anything."

PRHO #13: "and it was incredibly helpful because...we felt able to answer any question that someone asks... And that's quite nice to be able to not lie, and not feel like you have to give them an answer and not, you know. Because I saw a lot of House Officers starting here struggling with that."

PRHO #2: "We had some quite good um, communication skills sessions kind of spread out throughout the whole three years of our clinical training. There are definitely occasions when I've kind of recalled them and, especially the angry patient... and I try to remember them and think 'this isn't about me, this isn't personal', and step back from it all".

Students also commented that they had not really appreciated their communication skills teaching at the time they received it, or that they had found it embarrassing, but they realised the point of it after they started work (Code: *At the time it was excruciating but...*, i=5).

PRHO #20: "Um, er, though I dread to say it, probably, probably communication things were actually quite useful"

PRHO # 6: [when asked what helped to prepare him] "[laughs] at the time I hated it, but the communication skills... horrific....and they seemed so contrived and so false at the time, and a ridiculous waste of time, but I think some of the techniques that they taught us though have been really useful".

PRHO #24: "they're always quite embarrassing in a sense because you're doing it in front on everyone, but it does prepare you in a sense"

A minority of the PRHOs felt the communication skills teaching had been unrealistic or useless, or too focussed on breaking bad news (negative cases of the code *Communication skills teaching was useful).*

PRHO #4: "We did an awful lot of communication skills.... But it was something that, a lot of it came very naturally to me".

PRHO #11:" [laughs] we always found this funny at medical school, that everything ... was either 'patient communication' under that generic term, or 'breaking bad news'. There wasn't any sort of, for instance you know, middle ground [laughs]".

PRHO #16: "but they were you know, an actor, so it doesn't matter how much emotion they try and put into it, it's not going to be as realistic as the real thing."

Although they felt their training had helped prepare them, the PRHOs said that communication was the most difficult aspect of looking after patients with cancer. In particular they found it hard answering patients' questions, talking to relatives, knowing how much to say, and knowing how honest to be (Codes: *Answering patients questions,* i=17, *The patient was OK but it was hard to deal with the relatives,* i=5, *How much should I say?* i=4, *Patients want the truth,* i=4).

PRHO #17: "I could tell them that they had the cancer and I had no problem with that but it was just when they were asking questions specifically to do with prognosis and what was going to happen..."

PRHO #22: "they were the ones who would ask "how long?"...you know, you did just look at them and go "I don't know".

PRHO #3: "the patient asked 'How will I actually die?'"

They also said that while they might not be expected to actually 'break' bad news, they were often involved in the aftermath. Someone else would break the news, and then the patients would ask them the difficult questions, and this was one of the hardest aspects of their job.

PRHO #8: "the ward round will head off and the consultant will leave and then they'll grab me and say....."

During the interviews, the topic of 'talking about cancer' came up quite often. The PRHOs said they felt OK talking about cancer (Code: *Talking about cancer was OK,* i=14).

PRHO #22: "they know if they've got cancer... And you're not going to make it any worse by saying it"

PRHO #18: "I feel quite comfortable though, discussing...it... it's always going to be difficult discussing with a patient their diagnosis, but um, I, I don't find it a difficult thing to have to talk about."

PRHO #24: "I was able to talk to them... I didn't find that too bad. ... If they bring it up and what have you, then I'm happy in that sense"

PRHO #4: "it's not something I've been personally nervous about"

Three PRHOs described teaching during which they had been specifically encouraged to use the word 'cancer' with patients and some PRHOs seemed to be saying they felt fine talking about cancer because they knew that they ought to say this, not because they actually felt fine.

PRHO #22: "I remember it from the cancer teaching, was that they did teach you to say 'cancer' and I remember that. There was that, and there was the work 'suicide'".

The impression that PRHOs said they were 'OK talking about cancer' because they felt they ought to say this, rather than because it was actually true, was a recurring impression which both Kath Woolf and I perceived during the analysis. In support of this impression we have presented some examples where PRHOs admitted that they (or other PRHOs) found it difficult talking about cancer. One PRHO (who did not want to be taped) said that he hadn't *"actually sat down"* and talked to any of the patients about how they felt about their diagnosis; the most he had done was *"momentarily mentioned it in a jokey way"*.

PRHO #7: "I knew she had, she had like eyeball metastases, so it was pretty nasty but um, you know, you can't, you have to be quite careful what you say... Your normal day-to-day chat you have with patients doesn't seem quite right when you have a patient like that"

PRHO #18: "There were some people I think that find it quite difficult to, you know, to talk really with patients about these sorts of things"

In further support of this impression, we noticed that the PRHOs used euphemisms for cancer during the interviews.

PRHO # 9: "things we have to consider in older people"

PRHO #12: "delicate issues"

PRHO #23: "lumps and bumps that you take away"

PRHO #9: "so I've spoken to her a little bit and done my best to sort of mention that there might be something slightly more sinister going on without actually coming out and saying 'we think that you have cancer in your liver' um. [I told the patient] we have a number of thoughts, which as I've said have ranged from the more innocent to possibly the more sinister."

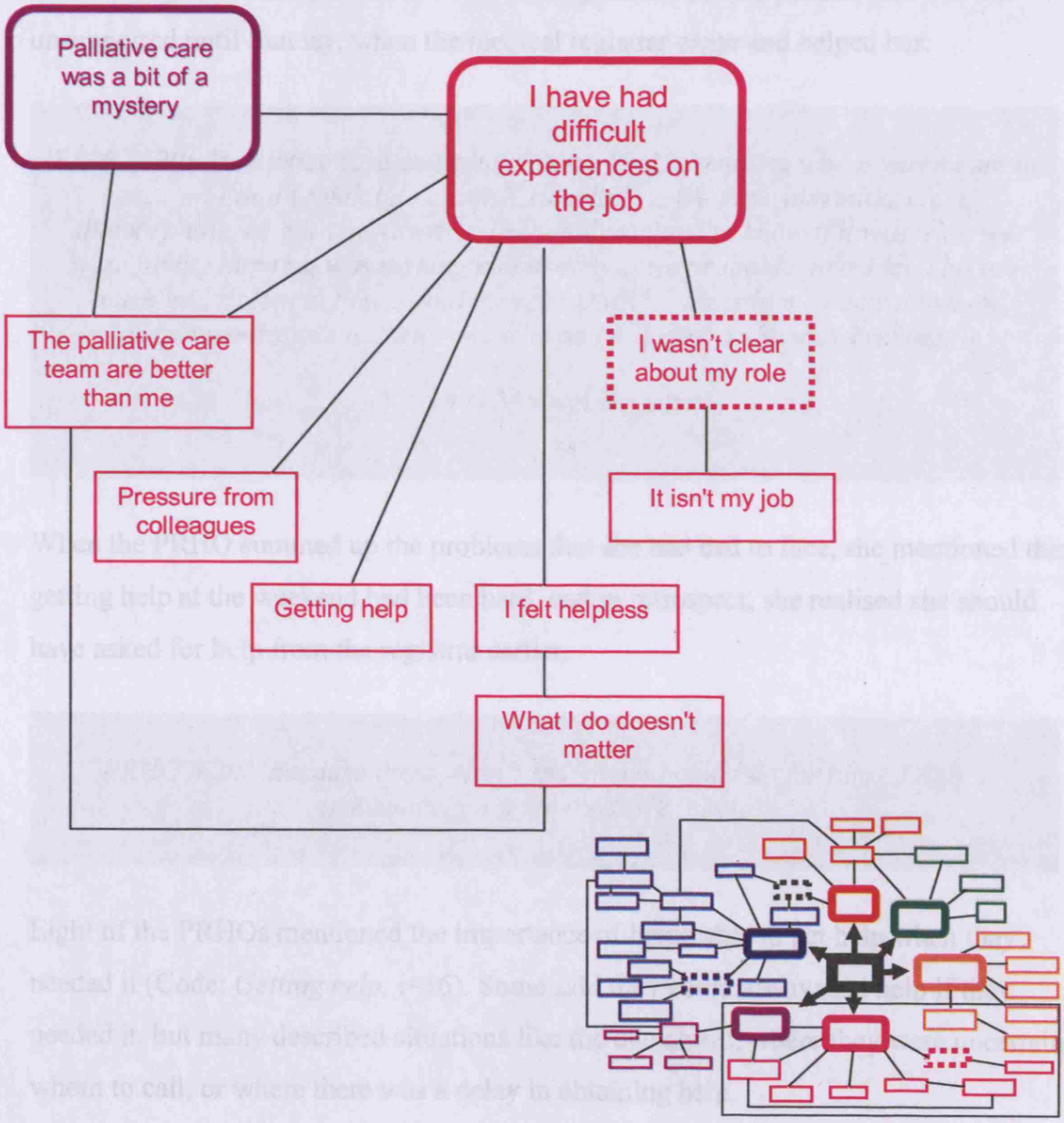
To summarise the PRHOs' opinions about communication skills, the PRHOs were grateful for the teaching they had received about communication skills, but they felt that communication was still one of the hardest aspects of being a PRHO.

PRHO #21: "when I was talking to him at the beginning I actually found that quite difficult... not because I was under-prepared, just because it's, it is difficult."

4.2.2.5 I have had difficult experiences on the job

Some of the PRHOs described very difficult situations they had been faced with since starting work. These were usually related to either challenging clinical scenarios, feeling unsupported, or feeling under pressure from colleagues for various reasons.

Figure 17 Section of Figure 10 referring to the theme 'I have had difficult experiences on the job'



One PRHO was left on her own at the weekend to look after a dying patient. The patient, who was known to have lung cancer, came in on Friday and died on Sunday.

PRHO #20: "The family had been recently told that he had you know, four months to live... [but they] were not prepared for it to be a terminal admission. I was basically the only doctor they saw. [The patient] was incredibly restless, incredibly uncomfortable... incredibly agitated and obviously dying. He had never been treated at X Hospital before. [His family] had begged the ambulance for him to be taken to Y Hospital...so they weren't happy about being here... we had no previous information on him... it was a complete disaster...it was horrific."

During the weekend, the PRHO had tried to contact the palliative care team for help. She had not been able to find out who was responsible for the patient, and was left unsupported until Sunday, when the medical registrar came and helped her.

PRHO #20: "palliative care consultants were kind of denying who it was meant to be...'oh I don't think I do cover X Hospital' ...We gave him midazolam, diamorphine, he got very drowsy. The family wanted to know if it was what we were giving him that was making him drowsy... we probably gave him a bit too much midazolam at first....And then the DMR – bless him – came down on Sunday and spoke to them, and [the patient] died on Sunday evening."*

** = Duty Medical Registrar*

When the PRHO summed up the problems that she had had to face, she mentioned that getting help at the weekend had been hard, and in retrospect, she realised she should have asked for help from the registrar earlier.

PRHO #20: "Because there wasn't that much I could do for him...I didn't immediately ask for the DMR's help"

Eight of the PRHOs mentioned the importance of being able to get help when they needed it (Code: *Getting help,* i=16). Some said they could always get help if they needed it, but many described situations like the one above, where they were uncertain whom to call, or where there was a delay in obtaining help.

PRHO #10: "often you've got half an hour waiting for a Registrar when someone's in dire straights"

The PRHOs described situations where they had been put into difficult situations by their colleagues (Code: *Pressure from colleagues,* i=11).

PRHO #1: "sometimes you get a lot of pressure by the nurses... they would deflect all their ...anxieties, fears, concerns on, onto yourself"

PRHO #17: "I found I was breaking a lot of bad news by myself and telling patients they had metastases... I felt a little bit unprepared... I thought it was a bit unfair [on the patients]." JC: "When you were put in this situation of having to break bad news, what was that due to?" PRHO #17: "The consultant just thought that it was a reasonable responsibility for me to have."

When the PRHOs talked about their role in the team, there were definitely some things that they felt were not their responsibility (Code: *It isn't my job,* i=17).

PRHO #6: "what chemotherapy regime they're on...that's up to the consultant and the registrar and I don't really care... all I care about is... am I going to be getting bleeped at half past ten because they're vomiting profusely because I haven't written up an anti-emetic?"

Sometimes however the PRHOs were not clear about what was and wasn't their job, or felt they were not an important member of the team (Code: *What I do doesn't matter* i=5).

PRHO #2: "I guess breaking bad news is difficult. Um and it's not that I don't want to do it, it's that it's not clear um, within the hierarchy who should be doing it, or we're made to feel like we shouldn't be doing it"

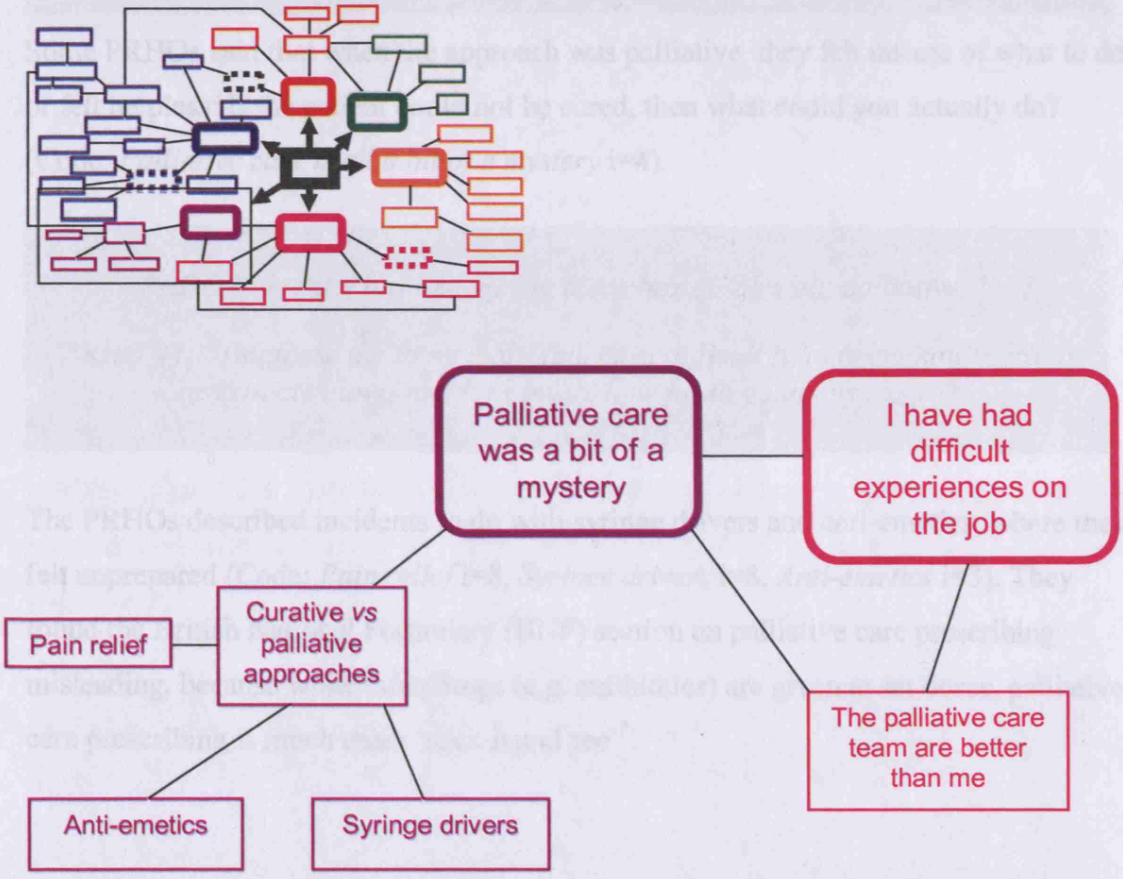
PRHO #11: "all we need to be is another dogsbody who knows basically how the ward runs"

PRHO #10: "the biggest decisions are made by much more senior staff."

4.2.2.6 Palliative care was a bit of a mystery

Seven of the PRHOs said they felt more prepared for looking after patients with curable cancer than for terminal care.

Figure 18 Section of Figure 10 referring to the theme 'Palliative care was a bit of a mystery'



This may have been because the PRHOs' training had focussed more on the curative aspects of cancer care (Code: *Curative vs palliative approaches,* i=14).

PRHO #1: "I find I didn't spend too much time thinking about dying patients as a medical student. I just thought about how do you treat illnesses."

PRHO #10: "when you've suddenly got someone extremely short of breath, saturations at 40%....deciding to give midazolam as opposed to treatment is quite difficult decision to do when you've just come out of medical school and you're taught to treat people and you're not really ever taught to palliate people."

PRHO #12: "I think a lot of the training that we did is, is more looking at curative or not, well if not curative then long term treatments rather than just palliative stuff.... It's not really an aspect we look at. We sort of look at you know, if you've got bowel cancer then you do this sort of resection... not what to do if that doesn't work."

Some PRHOs said that when the approach was palliative, they felt unsure of what to do, or felt helpless: If the patient could not be cured, then what could you actually do? (Code: *Palliative care is all a bit of a mystery* i=4).

PRHO #12: "it's just like the big black box of 'oh well, palliative'".

PRHO #4: "I suppose the thing that I find most difficult is knowing how much to investigate things and how much, how far to go at any stage."

The PRHOs described incidents to do with syringe drivers and anti-emetics, where they felt unprepared (Code: *Pain relief* i=8, *Syringe drivers* i=8, *Anti-emetics* i=3). They found the British National Formulary (BNF) section on palliative care prescribing misleading, because while most drugs (e.g. antibiotics) are given at set doses, palliative care prescribing is much more 'suck it and see'*.

* I have written to the BNF regarding this finding and they have confirmed that the palliative care section is under review and that the doses have been revised.

PRHO #20: "doing the subcut pumps was a bit of a nightmare ... the BNF bit on palliative care is atrocious"

PRHO #4: "We had very little time to go over things like syringe drivers and so on"

PRHO #1: "We had a patient who had problems with vomiting and she had terminal illness... and it was a weekend and I was just writing up a drug to treat the vomiting... and I just opened up the BNF as usual and prescribed, and then I got a call from the pharmacist who said 'OK fine, that's a good drug to use, but you just, yes the BNF says start at that, but in practice we don't, we start a lot lower'.....The patient was quite like, quite out of it. I um, kind of, um, was, sedated them a bit"

The point about knowing 'how much to give' was emphasised particularly by one PRHO, who had been left on her own with a patient in the middle of the night.

PRHO #10: "It was knowing how much, how far you could give palliation and how far was pushing it beyond palliation [laughs] if you see what I mean."

PRHOs felt lacking in palliative care expertise, and often needed help from the palliative care team. They felt uncomfortable or insecure about this, which affected their relationships with palliative care teams. (Code: *The palliative care team are better than me,* i=6).

PRHO #22: "the palliative care people were fantastic. We would just call them up and they would come and tell us what to do [laughs]."

PRHO #18: "on a day-to-day basis this is what they do, and they're going to be 10 times, 20, 50 times better at it than me... The Macmillan nurses are brilliant for the social stuff after that, but I do find it difficult that once you've handed over to them you don't want to feel that your role in organising any of that kind of thing is sort of redundant... and you don't feel as involved with the patient's sort of proper sort of, all-round care."

These feelings of insecurity had also emerged when they were talking about their role, and saying they sometimes felt that what they do did not make any difference (section 4.2.2.5).

4.3 Results of the consultant interviews

4.3.1 Participants

Fourteen consultants and one registrar agreed to be interviewed (68% response rate). The interviews were face-to-face (n=2) over the telephone (n=11) or by email (n=2) according to preference. Although ideally all interviews would have been face-to-face, pragmatically the consultants were widely distributed round the country and often wanted to perform the interviews at short notice when they had a spare few minutes.

There were no significant differences between the responders and the non-responders in terms of gender or specialty (Table 14). Both responding and non-responding consultants were contacted via their secretaries a median of 5 times. There were no significant differences between the PRHOs who did and did not recommend a senior colleague (Table 15).

Table 14 Features of the senior clinicians (comparing responders and non-responders)

	Responders (n=15)	**Non-responders (n=7)**	**p***
Specialty	9 medical (60%)	3 medical (43%)	
	6 surgical (40%)	3 surgical (43%)	p=not significant
		1 GP (14%)	
Gender	11 male (73%)	6 male (86%)	
	4 female (27%)	1 female (14%)	p=not significant

*** calculated using chi-squared and Fishers exact tests as appropriate**

Table 15 Comparison of PRHOs who recommended a senior colleague and those who did not

	PRHOs who were able to recommend a senior colleague (n=20)	PRHOs who were not able to recommend a senior colleague (n=5)	p*
Specialty	10 medical (50%)	2 medical (40%)	
	9 surgical (45%)	3 surgical (60%)	p= not significant
	1 GP (5%)		
Gender	7 male (35%)	2 male (40%)	p= not significant
	13 female (65%)	3 female (60%)	

*** calculated using chi-squared and Fishers exact tests as appropriate**

4.3.2 Issues and themes

As previously explained in reference to the PRHO interviews (section 4.2.2), on reviewing the interview transcripts a number of issues arose repeatedly. We gave each issue a descriptive code. These issues were easily grouped into themes. In this results section I describe each over-arching theme and the issues which it covers. There were 6 themes covering 27 issues (see Figure 19 for overview).

The 6 themes were:

1) Overall we are happy with our PRHOs (blue on Figure 19, also see page 114)

2) Communication skills is a challenging aspect of being a house officer (red on Figure 19, also see page 117)

3) Exposure to patients is important for training (orange on Figure 19, also see page 120)

4) PRHOs who are more mature are better prepared (green on Figure 19, also see page 123)

5) Different consultants have different models of how house officer learn (pink on Figure 19, also see page 124)

6) Personal experiences impact on working life (purple on Figure 19, also see page 125)

Figure 20 shows the issues, and the number of consultants who mentioned them. Figure 21 shows the total number of times each issue arose. Where I mention an issue in the text of this results section, I give its code name, and state the total number of times it arose (called 'i').

Kath Woolf and I independently coded the issues as they arose in the text. Inter-researcher agreement was excellent (97%). During the interviews five consultants raised issues that did not relate to the questions asked, for example, one consultant talked about the apparent excess of teaching in primary care compared to teaching in orthopaedics at his medical school. We gathered these non-related issues under the code '*Hobby Horse*' (i=9), and then did not analyse them further.

Figure 19. **Themes and issues from the consultant interviews**

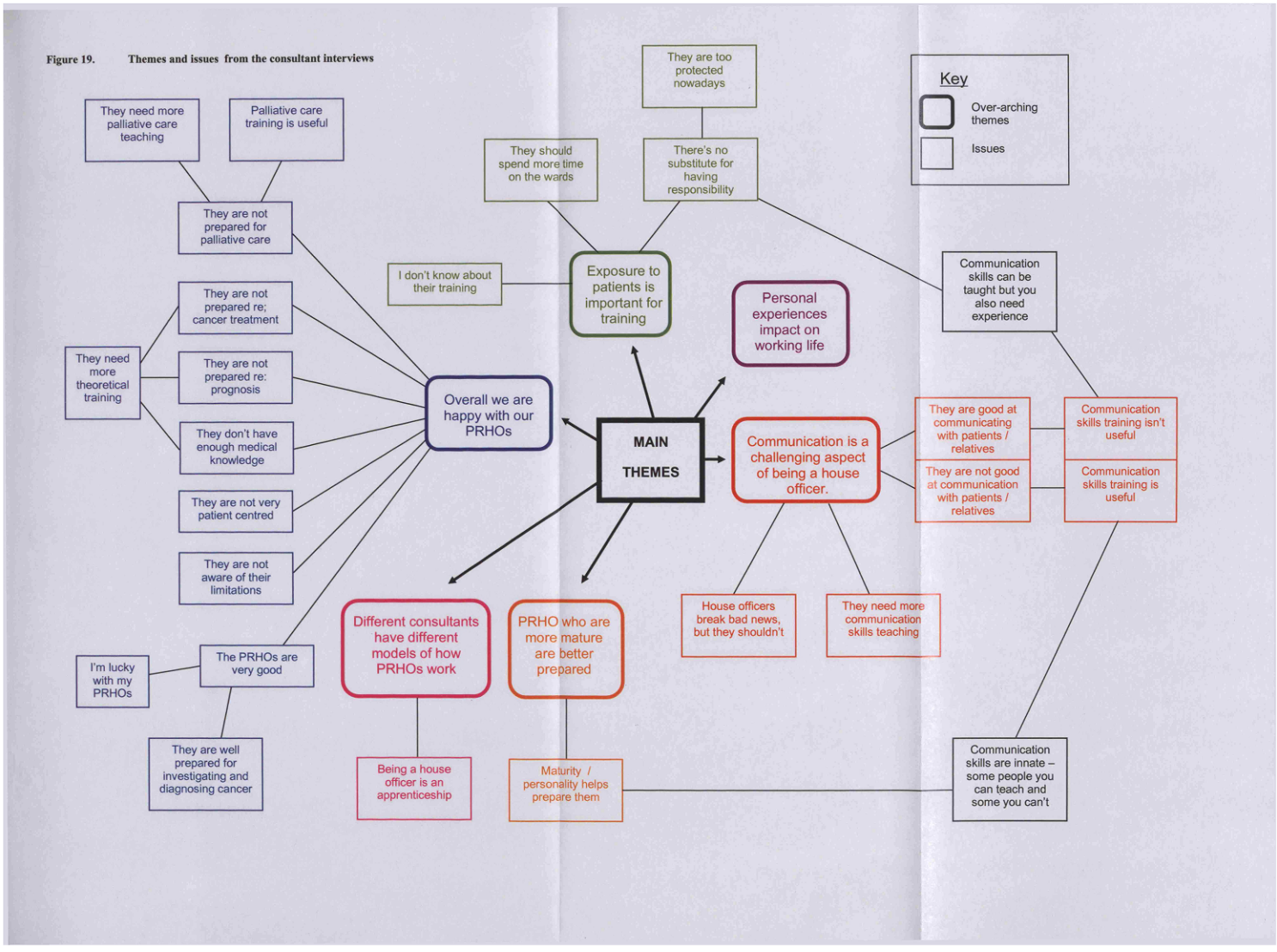
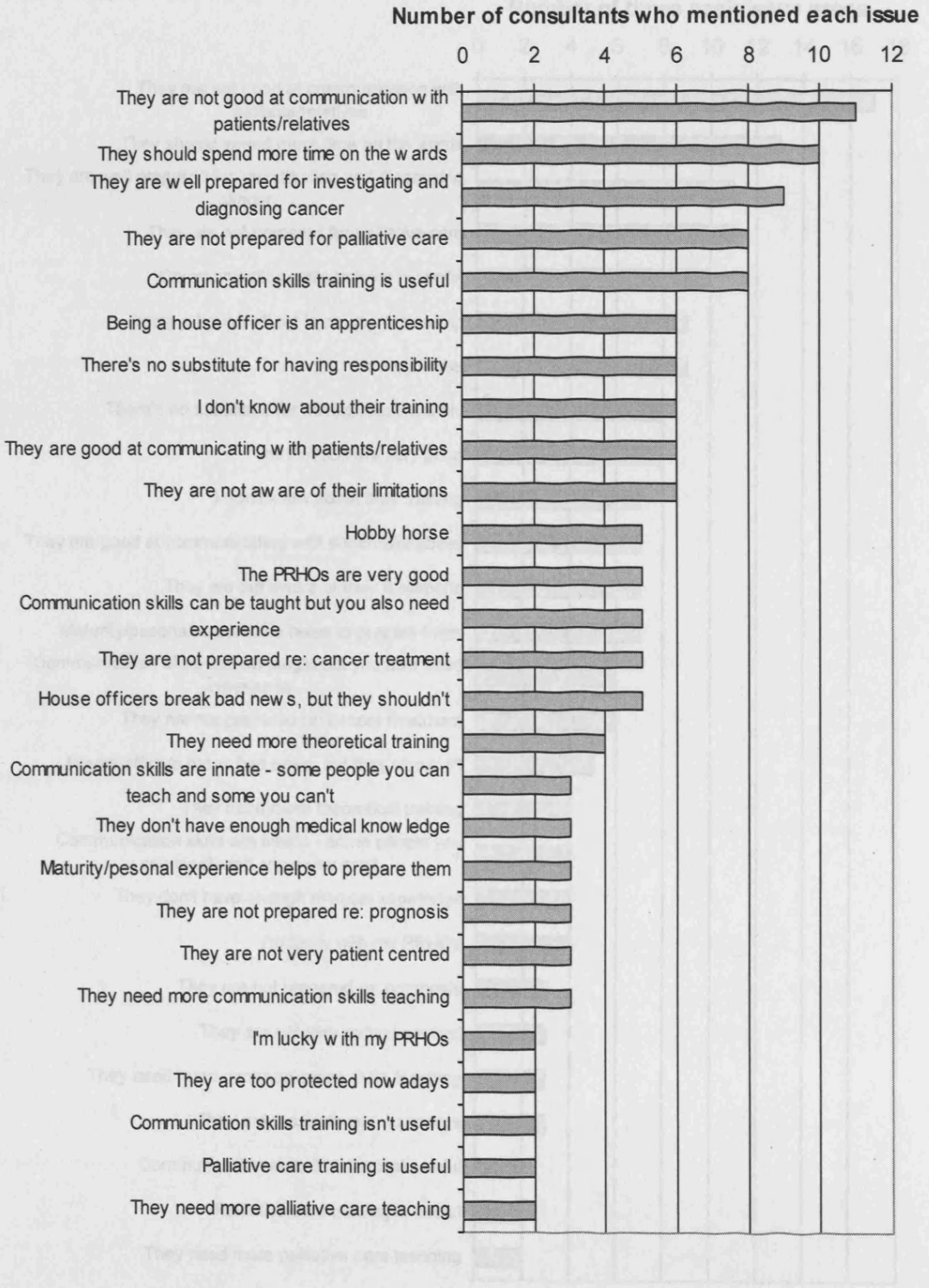
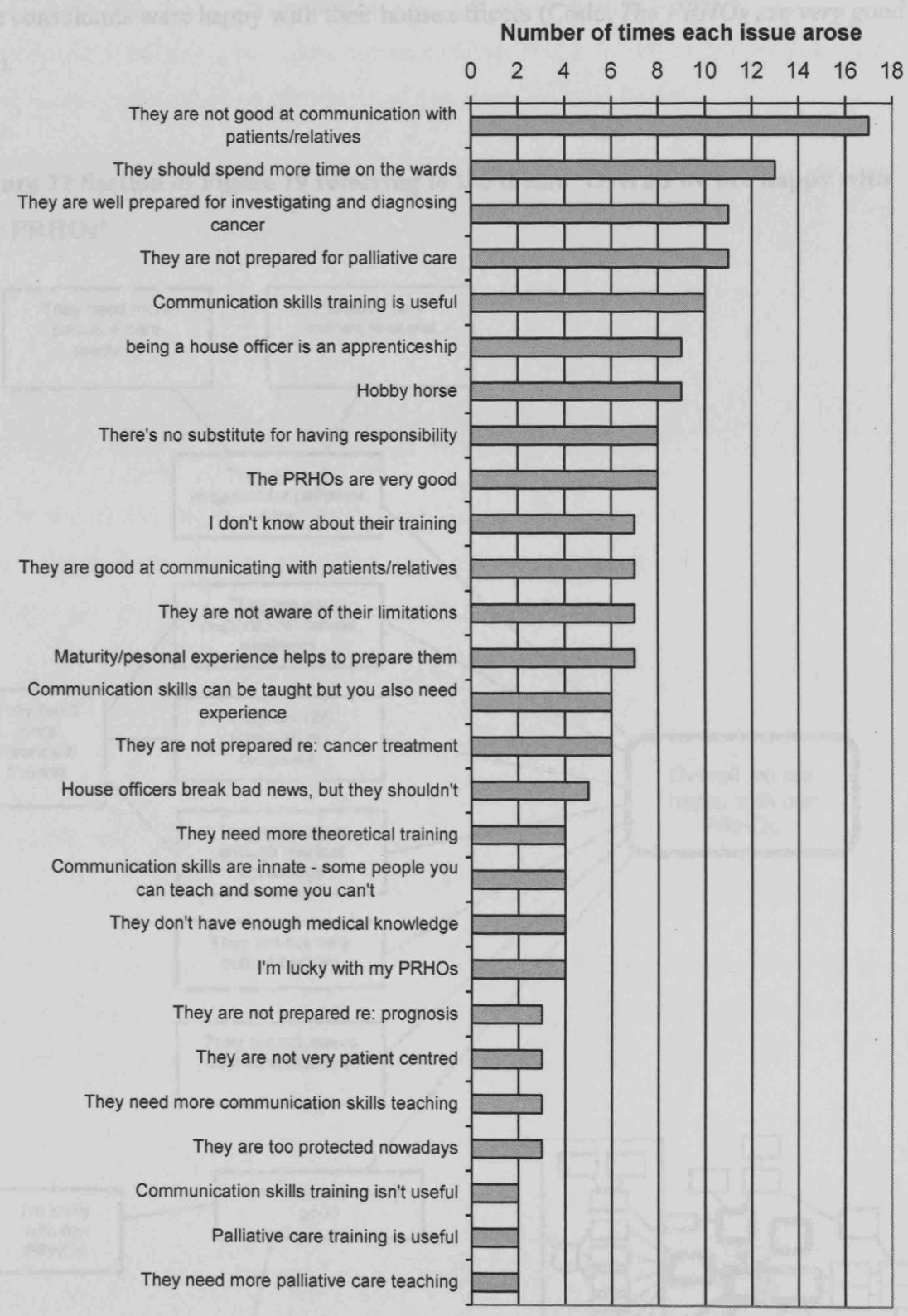


Figure 20 The number of consultants who mentioned each issue



The issues here are referred to by the descriptive 'code' names given to them.

Figure 21 The total number of times each issue arose

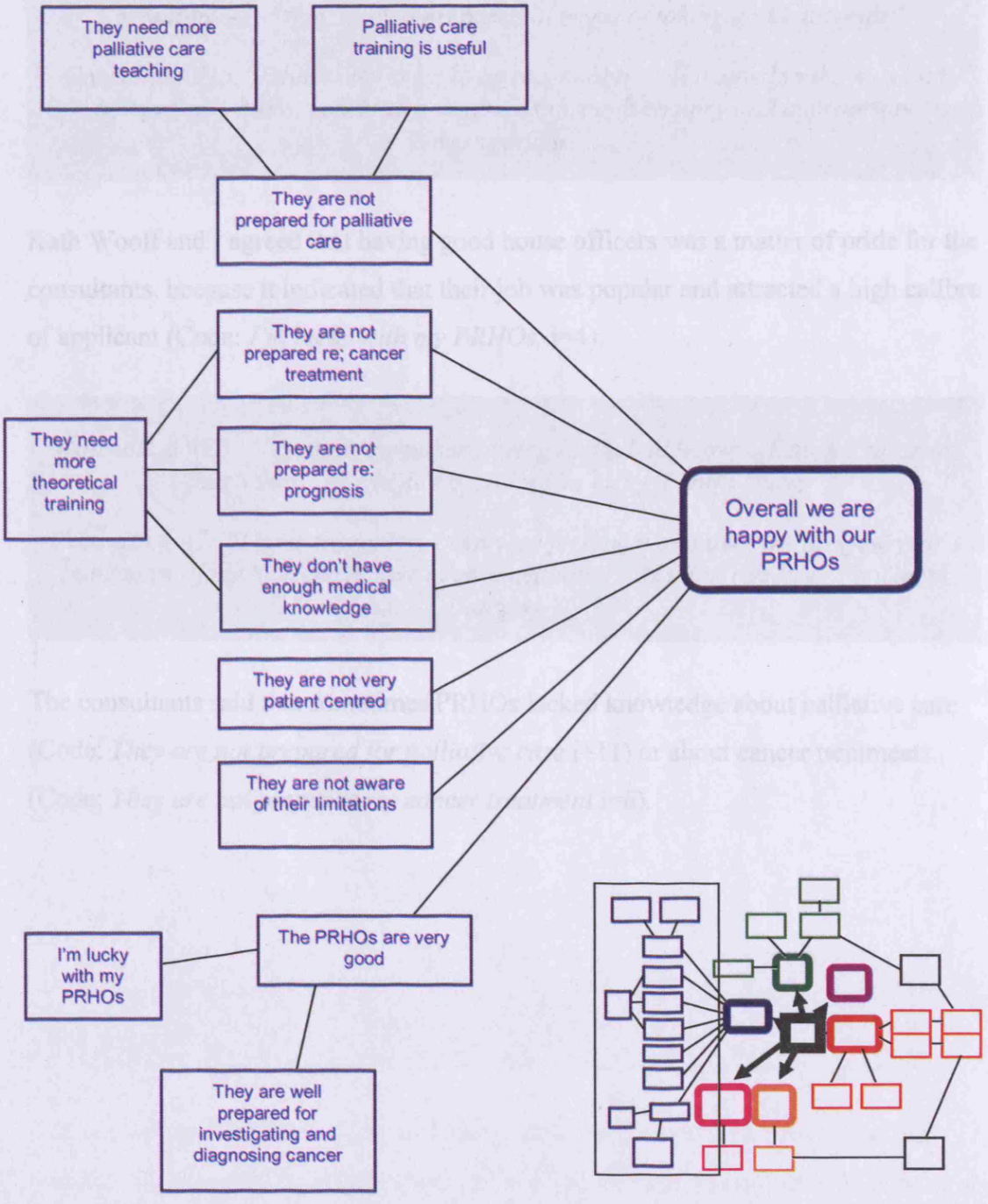


The issues here are referred to by the descriptive 'code' names given to them.

4.3.2.1 Overall we are happy with our PRHOs

The consultants were happy with their house officers (Code: *The PRHOs are very good* i=8).

Figure 22 Section of Figure 19 referring to the theme 'Overall we are happy with our PRHOs'



The consultants said PRHOs were well prepared for taking histories, recognising when someone might have cancer, and ordering the necessary diagnostic tests (Code: *They are well prepared for investigating and diagnosing cancer* i=11).

Consultant #4: "they certainly have a feel for which patients are likely to have cancer".

Consultant #7: "they're well prepared in terms of taking good histories".

Consultant #15:"I think they seem to be reasonably well trained in the nuts and bolts of, you know, reaching a diagnosis through enquiry and appropriate investigations."

Kath Woolf and I agreed that having good house officers was a matter of pride for the consultants, because it indicated that their job was popular and attracted a high calibre of applicant (Code: *I'm lucky with my PRHOs,* i=4).

Consultant #12: "I cannot remember having had a bad house officer for three or four years...Maybe it's because I'm lucky, I don't know."

Consultant #7: "I have to say I've been very fortunate and over the last few year I think most of my housemen have been exceptional.... I think I've been very lucky [laughs]."

The consultants said that sometimes PRHOs lacked knowledge about palliative care (Code: *They are not prepared for palliative care* i=11) or about cancer treatments (Code: *They are not prepared re: cancer treatment* i=6).

Consultant #13: "Um, I think they can make the diagnosis, but the next stage, sort of, is more difficult for them. Putting it all together. Working out the treatment, and it you, if you can't treat it, what do you do about it."

SpR: "I think they're not well prepared in terms of pain relief... symptom relief".

Consultant #6: "I'm sticking my neck out and saying 'no, I really think we should pull out here, I think we should be keeping him or her comfortable', and the House Officer's clearly not yet on board and is saying '...one more test... one more treatment'".

Consultant #8: "I think they are not particularly knowledgeable as to the different palliative techniques available and the various support available for patients with inoperable cancer".

Three consultants also said that some PRHOs lacked 'patient centredness' (Code: *They are not very patient centred* i=3).

Consultant #6: "they're very focussed on the medical side of it, and they're much less focussed on the emotional side of it"

Consultant #7: "It is variable, the degree of empathy and understanding"

Six consultants also said that some PRHOs took on more responsibility than they should, or did not know their own limitations and were wary of asking for help (Code: *They are not aware of their limitations,* i=7).

Consultant #13: "They feel they shouldn't admit they don't know something. Whereas actually there are things that they are not necessarily expected to know."

Consultant #6: "arrogant young men who think that they're doing fine and are in fact a liability".

Consultant #15: "Some housemen are not very well prepared for being team players... and these are the ones that go off on their own and do stuff without, without asking anybody."

One consultant described asking a PRHO to do a ward round on his own. She had thought that he would be able to cope, and she had told him to call her if there were any problems. When the consultant went up to the ward later, she realised that the PRHO

had not coped at all however. The interesting thing about this was that she said she had been very keen for the PRHO to call her if she was needed, and had tried to make this clear to the PRHO, but he still didn't feel able to ask for help. This suggests there is a real need for training for both PRHOs and consultants to make mutual responsibilities more clear.

Consultant #2: "and I think the other thing is around asking for help... the SHO was off...the SpR was away... so I knew that, you know, I needed to support [the PRHO] on the ward ... I said I'd come up at the end [of the day] and run through things with him... but he actually needed someone to do a ward round with him at that point, he couldn't kind of see the wood for the trees....I mean eventually I did realise that ... but it was , I think, after some distress to [the PRHO]... I should have recognised that he did have a problem...[but also] I think they need ...permission [to ask for help]"

4.3.2.2 Communication is a challenging aspect of being a house officer

Communication skills were a common theme in the consultant interviews, and widely differing opinions were expressed.

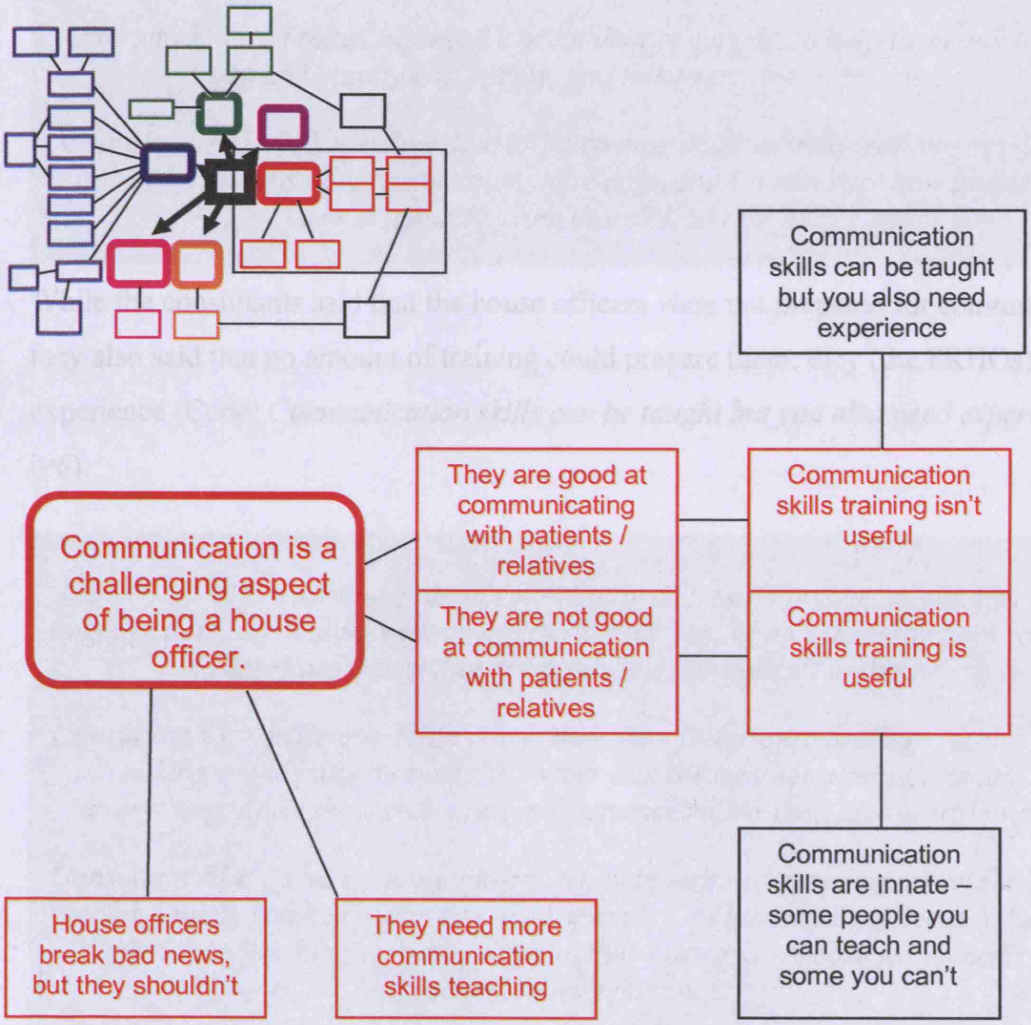
Some of the consultants said the PRHOs were well prepared for communicating with patients and relatives (Code: *They are good at communicating with patients/relatives,* i=7).

Consultant #2: "On the whole they are well prepared in terms of communication."

Consultant #10: "I think they are much better prepared for [communication with patients] than previous generations of doctors were."

Consultant #14: "I think they're quite well able to communicate with patients. On a sort of basic level."

Figure 23 Section of Figure 19 referring to the theme 'Communication is a challenging aspect of being a house officer'



A greater number of the consultants however expressed the view that PRHOs were not well prepared for communicating (Code: *They are not good at communicating with patients/relatives* i=17).

JC: "Are there any aspects of the patients' care which you don't feel your house officers are well prepared for?" 3: "Dealing with relatives. And breaking bad news."

Consultant #6: "I think they need a great deal of support to help them talk to the patients bluntly and openly, and talk to patient' relatives"

Consultant #13: "I know they do a lot of communication skills training at clinics, in sort of, undergraduate education these days. But I'm not sure how good they are at actually using that skill in real life."

While the consultants said that the house officers were not prepared for communicating, they also said that no amount of training could prepare them: they (the PRHOs) needed experience (Code: *Communication skills can be taught but you also need experience* i=6).

Consultant #12: "dealing with an emotionally distressed patient, dealing with an angry patient, er, dealing with an angry relative, um, when something goes wrong. [These] are things that are actually quite difficult to teach."

Consultant #1: "generally I think they, they, they feel unsure and have difficulty in talking to the patient about the cancer and the long-term prognosis and everything. And I think that's just inexperience rather than lack of training."

Consultant #14: "There's a big push recently in terms of communication skills, er, which I think, you know, you can teach them basics but largely it needs to be an experience-led thing... so I think yeah, that's adequately covered in medical school in my opinion."

The consultants acknowledged that communication was one of the hardest aspects of the job. They said that they tried to protect the PRHOs from difficult communication situations, but that in practice this was not always possible (Code: *House officers break bad news, but they shouldn't,* i=5).

Consultant #13: "they can ... explain the diagnosis, but how much of explaining the treatment... I'm not so sure they should be doing that, actually. It should be... a more senior person. But obviously the patient will ask them."

Consultant #15: "On this firm we wouldn't normally expect the houseman to deliver [the bad news]. What happens with some housemen is that they take it upon themselves to go and do it."

Most consultants were willing to express opinions about undergraduate training, despite often limited experience of this (Code: *I don't know about their training,* i=7). There were mixed opinions about communication skills teaching: Some felt that it was helpful (Code: *Communication skills training is useful,* i=10), while others felt that communication skills were innate and couldn't be taught (Code: *Communication skills are innate – some people you can teach and some you can't,* i=4), echoing those who said that experience was necessary for developing good communication.

Consultant #3: "I know that they do role plays and issues around breaking bad news but perhaps it should be extended to include dealing with questions, queries, complaints, angst from relatives, because that accounts for a lot of our work load and it's obviously a very important part of, er, the whole package."

Consultant #2: " I think actually, to be honest, they're quite often just innately skilled. They're just very nice people who've got...the right attitude."

Consultant #3: "A lot of it's very intuitive. I think. And some people are good at it and other people aren't."

4.3.2.3 Exposure to patients is important for training

The consultants had strong opinions about clinical training: They said that students should spend more time on the wards, and get more exposure to patients and clinical environments (Code: *They should spend more time on the wards* i=15). None of the consultants disagreed with this opinion.

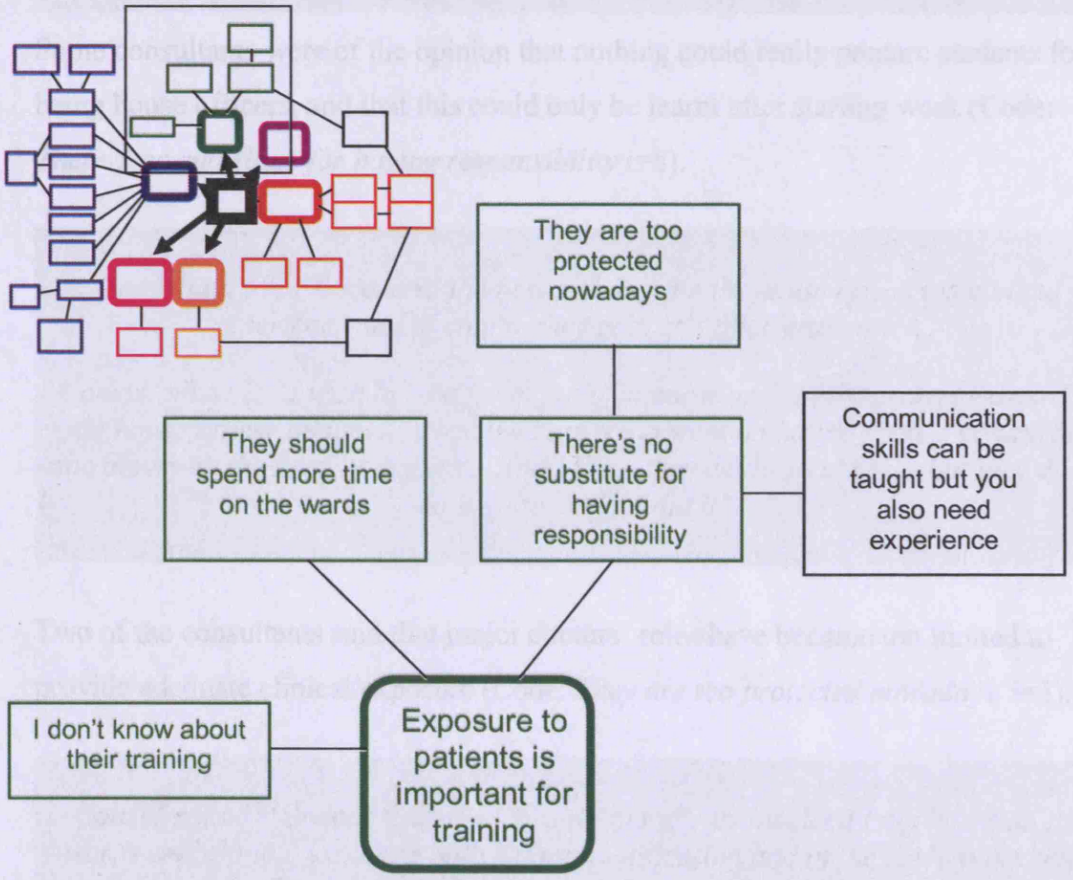
Consultant #11: "They obviously need exposure to patients."

Consultant #12: "they learn from watching doctors in action."

Consultant #4: "I think one thing that the medical school can do is emphasise the importance of their presence on the wards."

Consultant #6: "An attachment to a ward for a few weeks where you get to know Mrs X, you see her through her patient journey."

Figure 24 Section of Figure 19 referring to the theme 'Exposure to patients is important for training'



One of the consultants spent some time describing what he perceived as the barriers to clinical exposure, such as lack of emphasis by the medical school, competing interests including exams, reluctance from patients and lack of confidence from students.

Consultant #7: "The more patient contact they get, the better. And I think there is a problem with undergraduate training in terms of gaining real clinical experience with real patients for a whole raft of reasons. Um, er, patients don't always want to be seen by students, students feel they're getting in the way, um, it's very difficult to quantify, in a curriculum, the time spent talking to patients and relatives. Whereas it is much easier to quantify the lecture or the tutorial as it happens. So I think there's an emphasis in undergraduate training towards those things that can be logged. Whereas time spent just talking to somebody doesn't seem to count for very much... I would advocate that for the first 6 months in their clinical attachment they should be banned from the library [laughs], banned from exams... because, what happens is, given the choice between going and seeing a patient and clerking a patient, which they find difficult, and know they're not good at, and perhaps going to a tutorial or writing a report.... which has been the basis of their whole success to date.... many students they will run to the library rather than go to the ward."

Some consultants were of the opinion that nothing could really prepare students for being house officers, and that this could only be learnt after starting work (Code: *There's no substitute for having responsibility* i=8).

Consultant #8: "In general the best training for the house officers is clinical experience and of course they gain this after graduation."

Consultant #15: "I used to be a great fan of shadowing... in those days we used to do house officer locums... when the houseman went on holiday you'd go and do the locum on the firm, acting up... And I think they do do shadows... but they don't do it quite... like I did it".

Two of the consultants said that junior doctors' roles have become too limited to provide adequate clinical exposure (Code: *They are too protected nowadays,* i=3).

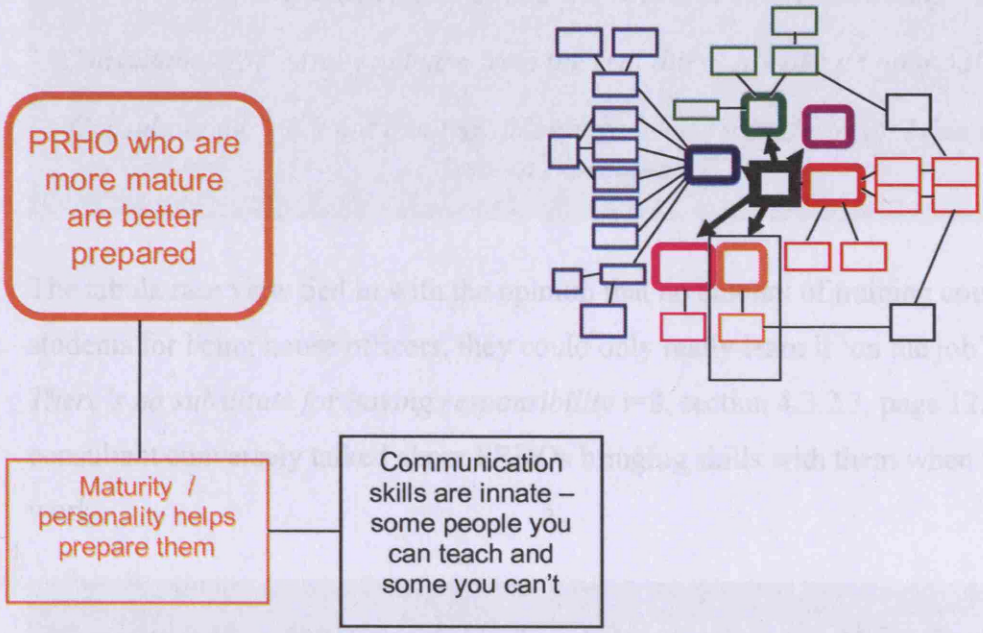
Consultant #8 "Undoubtedly the learning in the past involved long hours on the wards and clinical exposure both before qualification and in the early years after graduation. These have both been eroded away by the newer curriculum."

Consultant #11: "It's quite funny how, um, we sort of get a little bit of pressure from the postgraduate dean about what is acceptable...in terms of the tasks they do and so on.... It's funny how much is, is thought not to be useful. ...if it was followed fully by some people's training model then the house officers would have no work to do, really. It'd just be observational, and then it would, er, perhaps not be a great thing."

4.3.2.4 PRHOs who are more mature are better prepared

Three of the consultants said that older/graduate entry PRHOs were better prepared for starting work than their younger counterparts, or that life experiences such as having relatives who were ill helped to prepared students for starting work (Code: *Maturity, personality helps prepared them*, i=7).

Figure 25 Section of Figure 19 referring to the theme 'PRHOs who are more mature are better prepared'



Consultant # 10: "[Name of PRHO] was a graduate entry student, and that makes a difference actually... I think those students are generally a bit better prepared for communication and things. Usually just because they've knocked around for longer".

Consultant #6: "A huge amount of this is a maturity issue and some of them have it in bagfuls and some of them don't... I think some of it may depend on what experiences people have had themselves, you know, whether they've had grandparents or relatives or people who've died and things..."

Consultant #7: "You know that there's a life experience, um, which is a very important if unquantifiable part of any doctor... Which is what I meant by the maturity issues. Um, I wish I could find a better word for it."

4.3.2.5 Different consultants have different models of how house officers learn and work

A sub-group of the consultants described the PRHO year as an apprenticeship, saying that the PRHOs arrive as *tabula rasa* and are trained from scratch on the job (Code: *Being a house officer is an apprenticeship,* i=9). *Tabula rasa* is from the latin, meaning 'scraped tablet' or 'blank slate', and describes the notion that human beings are born with no built-in mental content, and that their identity is defined entirely by events after birth.

> *Consultant #14: "I am actually of the opinion that house officers don't need to know any medicine at all... it's a kind of on-the-job training"*
>
> *Consultant #15: "And you learn from the real thing. It's like an apprenticeship."*
>
> *Consultant #4: "It's not that they fall below what I would expect, I don't have a level of expectation"*

The tabula rasa view tied in with the opinion that no amount of training could prepare students for being house officers, they could only really learn it 'on the job' (Code: *There's no substitute for having responsibility* i=8, section 4.3.2.3, page 122). One consultant conversely talked about PRHOs bringing skills with them when they started work.

> *Consultant #7: " [PRHOs are] highly paid highly trained highly able 28 year old docs... they have been trained to ask the questions, rather than to blindly just do the test."*

The opposing view of consultant #7 is important because consultants who operate using the *'tabula rasa'* model of PRHO training may feel that training and preparedness are unrelated. This would have implications for their opinion about whether the house officers were prepared for starting work.

4.3.2.6 Personal experiences impact on working life

I asked all the consultants how their personal experiences had helped prepare them for looking after patients with cancer: 8 consultants described experiences that had moved them quite profoundly or changed their career in some way (one of the consultants became tangibly emotional during the conversation); 2 of the consultants said they had not really had any important personal experiences that had affected their work. One consultant misunderstood the question, and one chose not to answer it.

The consultants' personal experiences, as described overleaf in Table 16 overleaf, appeared to help them relate to their patients. There was one negative case to illustrate this. One additional consultant described an aspect of his personal life that helped him to distance himself from his patients. He said that he was involved in amateur dramatics, and our understanding of this was that he meant it helped him to put on a front.

JC: "I wonder if there's anything, um, any experiences you've had in your own life, outside your training, which have helped prepare you personally for looking after patients with cancer?" Consultant #14: "Um... well I've had no recent family die, but..." JC: "Some people say they've had an experience of ill-health which, although it wasn't directly related to cancer, they still feel it's helpful because it helps them to understand the patients experience..." Consultant #14: "No, I mean I think I'd say the opposite. [One of my hobbies is] acting"

Table 16 Consultants' personal experiences, and what they had learnt or gained from them

The consultants' personal experiences	What they have learnt or gained from these
"I came to my own hospital with my daughter"	*"All the issues you regard as being important as a healthcare professional become very irrelevant.... It's very humbling actually."*
"my father needed to have a mitral valve repair"	*"my understanding of the sort of questions that arise which we don't often think about was certainly expanded by that experience"*
"my granny died on Wednesday... my aunty died of cancer this year... brother died of muscular dystrophy [when I was a house officer]"	*"I think I must be 'Doctor Death' actually"* *[This consultant talked a lot about palliative care for non-cancer patients.]*
"personal experience of true grief and bereavement..."	*"...gives you an understanding that you can't get from any theoretical book.... Which is what I meant by the maturity issue"*
"I will always remember having to break the news of my sister's unexpected death to my parents – that will always leave a scar."	*"This has certainly helped me in being prepared to pick up the pieces".*
"My mother had a very good friend who died of ovarian cancer in her 40s..."	*"...And my Mum's perception of her care... she interpreted some things differently from how I might interpret them. So I suppose it was... realising that if you don't have any medial knowledge, you're not going to understand the information given to you."*
"For me, the thing that helps me do my job is having a stable home life...that gives me the ability to handle very stressful and emotional situations at work."	*"it's tempting to have an emotional barrier between yourself and the patient. So you never let them get through to you... and personally I think, and I teach, that that's wrong... But you can only [let down the barrier] if you have some mechanism for off-loading your own emotional distress."*
"I've had quite close relatives die of cancer."	*"And actually having seen people going through it, you have a bit of an idea what the patients and the relatives are going through."*

4.4 Drawing together the PRHO and consultant data

The consultant and PRHO interview data provide information about the same issues but from different angles. In this section, I make a qualitative comparison between the two sets of interview (PRHO and consultants), i.e. triangulate the data. Table 17 summarises the comparison.

Table 17 Summary of similarities and differences between PRHOs' and Consultants' views

Aspect of patient care	PRHOs views	Consultants views
Overall preparedness	Good	Good
Ability to recognize and diagnose cancer	Good	Good
Ability to get help when they need it	They can't always get help when they need it.	They don't always know when they need help, or how to ask for it.
Preparedness for palliative care	Poor	Poor
Patient centeredness	They learnt this on the job	They aren't always very good at this
Communication skills	The teaching about communication skills improves preparedness, but communication is one of the hardest aspects of being a PRHO.	PRHOs are not always very good at communicating. Communication is something you can't teach.

The main aim of this chapter was to identify factors that help junior doctors feel well prepared. Both the PRHOs and the consultants had views about what prepares medical students for being doctors. Medical training - in particular exposure to patients and to role models – was important for preparedness. Non-training related factors that contributed to preparedness were maturity, personality, personal experience outside work, experiences since starting work, and on-the-job support.

4.4.1 Similarities between PRHO and consultant interviews

Both PRHOs and consultants felt that PRHOs were well prepared for the PRHO year as a whole, and for investigating and diagnosing cancer, but not for palliative care. The consultants said the PRHOs were sometimes not very patient centred, and the PRHOs said that they had not realised until they started work that the patients were real people, and not simply depersonalised diseases or symptoms.

The PRHOs felt their communication skills training had been helpful, but some aspects of communication were difficult. The consultants said that current PRHOs were better at communicating than previous generations of PRHOs, but that some PRHOs still struggled with communication. Not all the consultants attributed the improvement in PRHOs' communication skills to their training. Both agreed that since communication was one of the hardest aspects of the job, sometimes the PRHOs felt unprepared.

Both PRHOs and consultants expressed reservations about communication skills training. The PRHOs said that sometimes it was embarrassing, or sometimes it was not relevant to real life as a doctor. The consultants said that there were factors other than training which contributed to a doctors' ability to communicate, including experience, maturity and innate ability.

The PRHOs and the consultants both commented that patient exposure and time on the wards were important aspects of undergraduate training for two reasons; meeting patients, and being exposed to clinicians at work. The consultants commented that clinical exposure was much reduced due to recent curriculum changes. The PRHOs valued patient exposure very highly.

4.4.2 Differences between PRHO and consultant interviews

When the PRHOs were talking about asking for help, they often said they wanted help but could not get it (because senior members of the team were busy, or because it was not clear who should help them). In contrast, some of the consultants said that the PRHOs did not always know their limits or ask for help when they needed it. Some went as far as to say that the PRHOs were arrogant, or not team players. PRHOs are doctors who are working without full registration, and as such, they should have regular supervision and should also feel able to seek help whenever necessary. We have uncovered a mismatch in PRHOs and consultants opinions about getting help. One explanation for this is that neither PRHOs nor consultants are aware of the problems the other party is experiencing. Other potential explanations are that PRHOs are creating narratives around their mistakes, to indemnify themselves from blame, or PRHOs and consultants are failing to communicate well with each other.

We asked every interviewee about any personal experiences, outside their training, which had contributed to their preparedness for practice. The PRHOs talked about their friends or relatives who had had cancer (or other illnesses), saying this made them more aware of the patients' or relatives' perspectives. PRHOs blurred the boundaries between their patients and their relatives. There were parallels between they way they described particular patients who had helped them understand about cancer, and the way they described their relatives who had been ill. The consultants' answers were more varied: some of their experiences seemed to have influenced their practice or their career choice.

From my perspective as the interviewer, asking the PRHOs about their personal experiences was easy: they grasped the point of the question quickly and could give examples where personal experiences had helped their preparation for practice. Asking the consultants the question was much more difficult. One consultant misunderstood the question, one chose not to answer it, and several of the consultants gave answers that were emotional and moving. This may have been explained by the fact that the consultants were older, so were more likely to have had close personal encounters with death or illness. Because the consultants were further on in their careers, they had had the opportunity to develop their careers under the influence of their personal

experiences. If we interview the PRHOs again in 20 years, some of them may well have made career choices influenced by their personal experiences.

4.5 Discussion

4.5.1 Summary of findings

The study has identified areas where PRHOs feel well prepared (recognising and diagnosing cancer, communication skills), and areas where PRHOs feel unprepared (palliative care, answering patients questions, radio and chemotherapy). PRHOs may depersonalise patients, or find it hard to be patient-centred. Although PRHOs feel well prepared for communication skills, both consultants and PRHOs agree that communication is the most challenging element of being a house officer.

This study has identified the following factors that may affect preparedness for cancer care:

- Exposure to cancer patients
- Training in oncology, palliative care and communication skills
- Feeling supported on the job
- Being more mature or having more life experiences
- Personal experiences outside formal medical training

4.5.2 Strengths and weaknesses of the study

Four methodological issues may have affected the validity and reliability of the results.

The completeness of the data

In quantitative studies, statistical techniques are available to calculate whether a study is adequately powered to reject the null hypothesis. In qualitative studies, researchers must ask themselves: if x more participants were interviewed, would any new themes would emerge? In this study, no new themes emerged after approximately the 20th PRHO interview, which suggested that saturation had been reached and the sample size was adequate.

The data would also have been incomplete if the participants were holding back information, for example because they were reluctant to criticise their medical school. Three of the consultants did question me about my loyalties:

> *"You're not phoning from this region, are you?"*

There might therefore be some legitimate concern that interviewees were reluctant to speak freely about their oncology training to someone who they knew was an oncologist, or to criticise their medical school to a stranger. I attempted to create a safe environment during the interviews and to be non-threatening in my approach. The findings indicated that the PRHOs and consultants were speaking freely: several of the PRHOs openly criticised their training, and some of the consultants criticised their postgraduate deaneries.

The validity of the results

In asking all interviewees about their personal experiences we recognise that we specifically invited certain responses, and that the interpretation of the data about personal experiences must be cautious.

Reliability of the data analysis

Two independent researchers analysed the qualitative data presented in this chapter. Inter-observer agreement was adequate for both sets of data, although significantly higher for the consultant interviews (97%) than for the PRHO interviews (74%). The consultant interviews were shorter therefore it was easier for us to immerse ourselves in the data. The consultant codes were also more focussed possibly because the answers given by the consultants were more 'to the point'. Cases of disagreement were all resolved by discussion, except as described in section 4.2.2 page 79.

The validity of the triangulation

In this study triangulation was performed by asking two groups of interviewees the same questions, and comparing their answers. There was a high level of authenticity in the triangulation, because the consultants were the senior colleagues of the individual

PRHOs. However, we asked the PRHOs about how prepared they FELT, but we asked the consultants about how prepared the PRHOs WERE. As discussed in section 1.2.2.2 (page 24), the relationship between feeling prepared and being prepared is not fully understood. Hence the only question that we triangulated exactly was the question about personal experiences (since in this case we asked the exact same question to the consultants and the PRHOs). We interpreted the data with this in mind.

4.5.3 Comparisons with previous research

There is evidence that PRHOs experience high levels of unpreparedness, depression and burnout [4;40;196]: in our study however, although some PRHOs described negative experiences they did not describe feeling burnt-out, exhausted, or totally unprepared. When the PRHOs talked about being unprepared, it was for a specific thing, e.g. palliative care. We cannot be sure of the significance of this comparison with the previous literature because the PRHOs in our study were all volunteers or volunteered. This finding merits further exploration using quantitative methods.

During the interviews the consultants and trainees agreed about areas of greatest and least preparedness (see section 4.4 page 127). Previous researchers have identified discrepancies between PRHOs' and consultants' views of preparedness (as discussed in section 1.2.2.2 page 24). Our data has provided some possible explanations for these contrasting views. Consultants described differing expectations of their house officers, which may have affected the consultants' views on preparedness. Consultants fitting the '*tabula rasa*' model (page 124) thought that PRHOs should be learning on the job, and may therefore have judged their preparedness more leniently than the consultants who believed that PRHOs should bring skills with them from their medical school training. The consultant interviewees described a subset of PRHOs who were arrogant, over-confident, and unable to assess their own skills.

There is recently published quantitative evidence that PRHOs feel well prepared for communicating with patients [49], and we have replicated this finding. By using a qualitative method, we can draw some more detailed conclusions. The PRHOs felt well prepared for communicating with patients and felt their communication skills training had been useful, but they also said that they were unprepared for particular aspects of communication such as answering patients' questions. The PRHOs and the consultants

agreed that communication was one of the hardest aspects of being a doctor, and that doctors needed experience as well as training to become competent communicators.

When learning about new diseases, students often learn pathology, epidemiology, presentation and investigation before treatment and prognosis. This is reflected in the interview data: the PRHOs felt better prepared for recognition and diagnosis of cancer than for treatment and prognosis. This may suggest that teachers place emphasis on recognition and diagnosis of cancer, at the expense of treatment options. Alternatively, it may be because recognition and diagnosis are intrinsically easier for students to understand than treatment.

4.6 Conclusions

We did not find evidence of a systematic lack of preparedness amongst PRHOs. Despite the high response rate amongst our interviewees and the even distribution by gender, region, and speciality, a quantitative study is needed to confirm this finding.

This qualitative study has provided evidence to support the validity of measuring PRHOs' subjective views of their preparedness: the consultants and the PRHOs agreed about areas where students should have more training, e.g. palliative care. I found no evidence to challenge the use of preparedness as a linear construct: the terms 'prepared' and 'unprepared' appeared to represent opposite ends of the same spectrum. Finally, I found that when PRHOs said 'prepared', they did not mean 'competent' or 'confident'. For example, interviewees referred to being 'as prepared as you ever could be', and although they felt well prepared for communicating with patients, they said they still found communication hard.

The following factors may affect preparedness: exposure to cancer patients; training in oncology, palliative care and communication skills; feeling supported on the job; being more mature or having more life experiences; and personal experiences outside formal medical training. In Chapter 5, I describe the results of a questionnaire study performed to quantify the impact of these five factors upon preparedness.

Chapter 5. A questionnaire study of preparedness in Pre Registration House Officers

"Having prayed awhile, he gave the Executioner the token of his preparednesse, whereat the Heads-man...severed his head from his body."

Hamon L'Estrange, The reign of King Charles, 1654

Summary

I sent a questionnaire to all 5143 PRHOs in the UK in May 2005. The response rate was 43% (n=2062). The majority of PRHOs felt prepared for diagnosing cancer and breaking bad news. Only a few felt prepared for dealing with oncological emergencies and for chemotherapy and radiotherapy knowledge. PRHOs stated that symptom control and communication skills were the most important things for medical students to learn about cancer. The strongest predictors of preparedness were relevance of undergraduate teaching to the first year of work, and exposure to patients with cancer at medical school.

5.1 Introduction

Medical students who pass their final clinical exams start work at the beginning of August each year, whether they are prepared or not. The challenge for medical schools is to prepare them as well as possible; however, it is not clear how medical schools should best achieve this.

Cohort studies have shown that students from newer courses such as Problem Based Learning (PBL) courses and/or graduate entry programs feel more prepared than their counterparts from more traditional course [54-57]. It is not clear from these previously published studies which aspects of the new courses result in the increase in preparedness [197]; for example, is it the PBL itself, or is it some other component of the modernised course such as an expanded shadowing program? I have performed a questionnaire study designed to build up a quantitative picture of the contribution of different elements of medical training to preparedness.

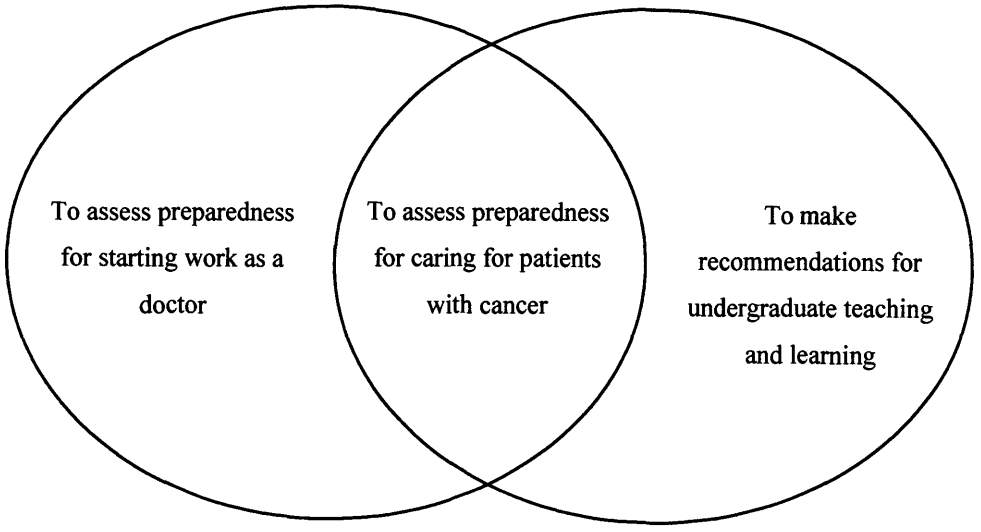
From the review of the literature described in Chapter 1 and the results of the qualitative study described in Chapter 4, I identified a number of candidate factors that might affect PRHOs' preparedness. I used these findings to develop a questionnaire for PRHOs. The questionnaire asked about preparedness for starting work as a doctor, and more specifically about preparedness for caring for patients with cancer. Table 18 (overleaf) summarises the candidate factors and the elements of preparedness which were measured by the questionnaire.

Chapter 3 described the methods by which the questionnaire was developed and distributed. In this chapter, I describe the results of the pilot study and the results of the questionnaire. This chapter comprises four main sections: firstly (section 5.3) the demographics of the respondents; secondly a description of their oncology teaching (section 5.4); thirdly their preparedness for starting work (section 5.5, see also Table 18 row 1); and finally their preparedness for caring for patients with cancer (section 5.6, see also Table 18 row 2). There is necessarily some overlap between preparedness for starting work and preparedness for caring for patients with cancer, as indicated by Figure 3 from Chapter 1, which is reproduced overleaf.

Table 18 Summary of the elements of preparedness and the candidate factors which were included in the questionnaire

Elements of preparedness	Candidate factors which may effect this element of preparedness
1. Preparedness for starting work as a doctor	PRHOs' age and personality traits
	Medical school attended
	Style of medical school course
	Teaching which is relevant to being a house officer
	House officer shadowing
	Feeling well supported at work
2. Preparedness for caring for patients with cancer	Doing an oncology attachment
	Doing a palliative care attachment
	Meeting patients with cancer
	Having personal experiences of cancer

Figure 26 Reproduction of the outline of the thesis aims



The questionnaire was designed to test the following main hypotheses:

- That PRHOs felt poorly prepared by medical school for starting work as doctors; that such preparedness was related to the medical school attended and the type of course; that preparedness was improved by medical school teaching that was relevant to real life as a doctor; that preparedness was improved by shadowing attachments; that preparedness was related to PRHOs' personality, age, and support at work.
- That PRHOs felt better prepared for some aspects of caring for patients with cancer than for others; that their preparedness was improved by doing an oncology or palliative care attachment, meeting patients with cancer, and possibly also personal experiences with cancer.
- That factors affecting preparedness for starting work as a doctor, would also specifically affect preparedness for caring for patients with cancer.

I used standard criteria for accepting or rejecting the hypotheses (i.e. a p value of <0.05).

5.2 Results of the pilot study: refining the questionnaire

A pilot version of the questionnaire was developed from the interview findings. This section describes the results of the pilot study, and the changes that we made to the questionnaire in light of the pilot findings. PRHOs at two hospitals and 5th year medical students at RFUCMS completed the pilot questionnaire (n=39). The purpose of the pilot study was to identify any items in the draft questionnaire that were ambiguous or unacceptable (by flagging up unused answers or high levels of missing data), to talk to the respondents about the questions, and to time how long the questionnaire took to complete. We had no pre-determined criteria for accepting or rejecting questions. All the major changes made as a result of the pilot study are described over the next 6 pages.

5.2.1 Changes made to the questionnaire

Simplify question about hospice visits

The pilot questionnaire asked *'Did you visit a hospice during your training?'*. Respondents could pick from the following list of options: *'yes for > 7 days' 'yes for 3-7 days' 'yes for1-2 days' 'yes for <1 day'* and *'no'*, ' Only one respondent ticked the options *'yes for > 7 days'*, so we removed this option.

Delete ambiguous questions about communication

The pilot questionnaire asked respondents to agree or disagree with the following statements; *'I felt prepared to give patients the amount of information they wanted'* and *'I felt prepared to treat each patient as an individual'*. We abandoned these two questions because they were ambiguous, e.g. for the first question, some respondents interpreted the statement as meaning they did not know how much information to give, and some as they didn't have access to the information.

Re-organise questions about preparedness for cancer care

In the pilot, all questions about preparedness for cancer care were asked twice; the first time with a prefix referring to all patients with cancer, and the second time with a prefix referring specifically to patients with incurable cancer. This approach was not successful; because respondents assumed the questions had been duplicated by mistake, and did not read the prefixes. To solve this problem, we shortened the list of questions about advanced/incurable cancer from ten questions to four questions. We chose to keep questions which were important – e.g. *'I felt prepared for looking after patients with incurable cancer'* - or which indicated discrepancies in preparedness for the care of curable and incurable cancer. Figure 27 shows an example of a question we discarded, and Figure 28 shows an example of a pair of questions that we retained because discrepancies were found.

Figure 27 Results of the pilot study showing a pair of questions where one was discarded, because the answers were very similar

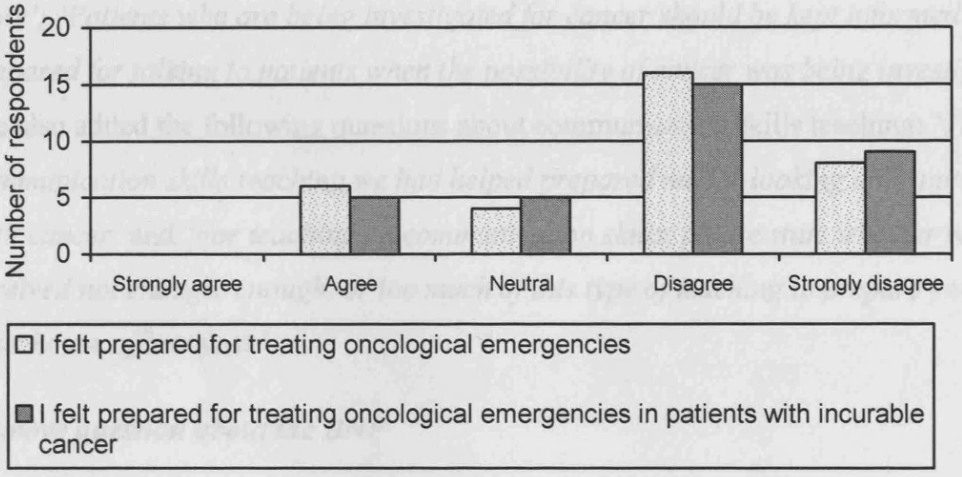
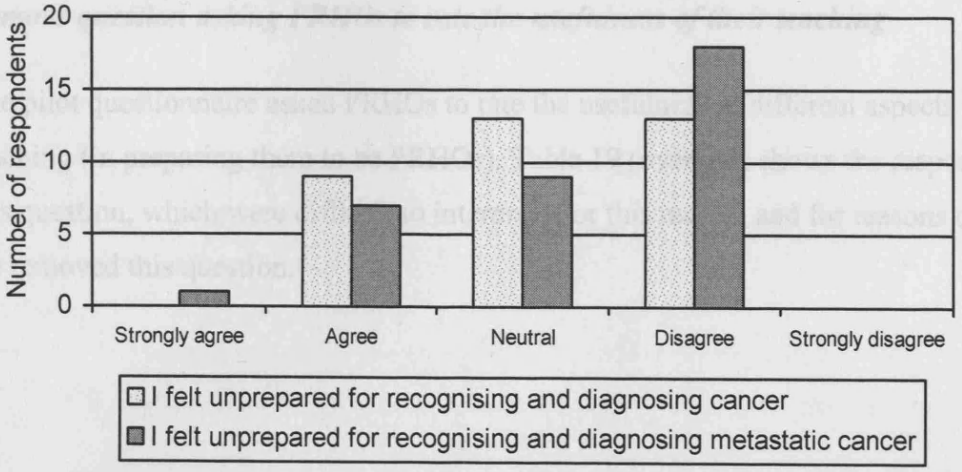


Figure 28 Results of the pilot study showing a pair of questions where both questions were retained



Add new questions about communication

During the pilot, respondents commented that there were very few questions about communication e.g. breaking bad news (n=4) or talking to patients about investigations (n=3). As a result we added the following questions; *'I felt prepared for breaking bad news'; 'Patients who are being investigated for cancer should be kept informed'; 'I felt prepared for talking to patients when the possibility of cancer was being investigated'.* We also added the following questions about communication skills teaching: *'The communication skills teaching we had helped prepared me for looking after patients with cancer'* and *'For teaching on communication skills, please state whether you received not enough, enough, or too much of this type of teaching to prepare you for your house officer year'.*

Remove question about the BNF

The pilot questionnaire asked about the usefulness of the British National Formulary (BNF), because during the interview study, two PRHOs said that the palliative care section of the BNF was confusing (see section 4.2.2.6 page 106). In the pilot study only 10% of respondents agreed that the BNF section on palliative care was unhelpful, so we removed this question, partly because it was not of central relevance, and partly because the pilot results suggested it was not a view held by many PRHOs.

Remove question asking PRHOs to rate the usefulness of their teaching

The pilot questionnaire asked PRHOs to rate the usefulness of different aspects of their teaching (in preparing them to be PRHOs). Table 19 (overleaf) shows the responses to this question, which were difficult to interpret. For this reason, and for reasons of space, we removed this question.

Table 19 Results of the pilot study: Responses to the question: *'How useful were the following aspects of your training in preparing you for looking after patients with cancer?'*

	Number of respondents who ticked....				
	Helped prepared me a lot	Helped prepare me a bit	Didn't help prepare me much	Didn't help prepare me at all	Didn't have any
Communication skills teaching	7	26	3	1	2
Oncology teaching overall	2	21	10	3	1
Talking to patients with cancer	12	16	4	1	4
Watching other doctors	13	22	2	0	0
Palliative care teaching	7	13	5	2	10
Ethics and law teaching	2	13	14	5	3
Talking to patients who are terminally ill	8	17	7	1	1

NB The total varies by row, because some respondents missed out some questions.

Re-word question about the importance of different aspects of oncology teaching

The pilot questionnaire asked the PRHOs to rank, in order of importance, the three aspects of oncology that they thought were most important for medical students to learn. Respondents did not interpret this question consistently, as shown by their answers (Table 20): some respondents interpreted 'third most important' as 'least important'. This seemed potentially more interesting, so I changed the wording of the third box to read 'least important' in order to clarify this question.

Table 20 Results of the pilot study: Responses to the question: *'Based on your experience as a house officer, please rank, in order of importance, the 3 aspects of oncology which you think are most important for medical students to learn'*

Group A: Examples of answers reflecting the third most important thing	Group B: Examples of answer which may reflect something viewed as unimportant
occult malignancy as a differential diagnosis in a patient in whom you're not sure what's going on	details of radiotherapy/ chemo regimes
how to practically do stuff and manage emergencies	cell biology of cancer
how to answer tricky questions	understanding pathology

5.3 Response rate, reliability and demographics

5.3.1 The response rate

To determine the response rate it was necessary to know the denominator, i.e. the number of PRHOs in the UK in 2004/5. We used 5143 as an estimate, because the GMC register lists 5143 PRHOs for the year 2004/2005, and doctors cannot work as PRHOs without being on this register. The register includes the vast majority of UK

graduates from 2004, plus some doctors (an unknown number) who graduated before 2004, many of whom graduated outside the UK. 5143 is a generous denominator, because we know from a recent survey that some doctors provisionally registered with the GMC are not working as PRHOs [198] (again, an unknown proportion).

50 PRHOs were excluded from the study because they worked in the hospitals where the pilot study was performed. A further 309 did not have the opportunity to participate because their deanery or PEC declined to participate (Edinburgh deanery declined participation because they were performing a local questionnaire, see Appendix 5.1, and several PECs declined because they were busy running foundation year pilot studies). Hence, 359 PRHOs were excluded from the denominator when calculating the response rate as follows:

Total number of PRHOs	= 5143
Exclusions	- 50 participated in the pilot study
	- 148 in the Edinburgh deanery
	- 161 at PECs that declined entry
Denominator for the response rate	= 4784

We received 2160 responses. 28 of these were by email, the rest were by post. I excluded respondents who were UK graduates from before 2003, or non-UK graduates from before 2001 (n=98). The reason for this was that these doctors were likely to have been more senior than PRHO level when they completed the questionnaire. The raw response rate was 2160/4784 = 45.2%, and after exclusions the response rate was 2062/4784 = 43.1%. An additional 20 questionnaires were returned as follows: 'not known at this address' (n=15); unusable (n=4); and uncompleted (n=1, with a covering letter explaining the PRHO had studied in India, and so didn't feel he should fill it in).

In the specific case of analyses of differences between UK medical schools, I excluded non-UK graduates (n=205), and respondents who did not state their medical school or country of graduation (n=36). There was some overlap between categories of exclusions, therefore the maximum number of exclusions was 253; 98 because they

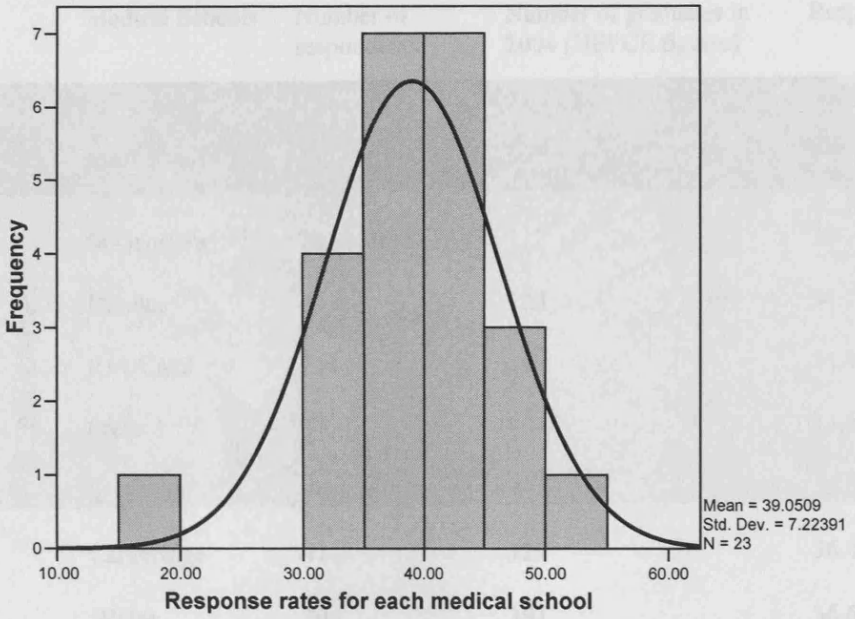
were probably not PRHOs; and 155 because they were not graduates of a known UK medical school.

5.3.2 The representativeness of the sample

Higher Education Funding Council for England (HEFCE) graduation statistics were used to estimate whether our sample was equally representative of all UK medical schools. HEFCE list 4805 students graduating from UK medical schools in summer 2004. The HEFCE figures are not accurate for the absolute number of PRHOs from each medical school, because they include as 'graduates' those medical students who obtained a Bachelor of Sciences degree. The figures do however allow an estimate of the proportion of graduates who are from each medical school.

Using HEFCE figures as the denominator, the mean response rate by medical school was 39.1% (95% CI 35.9% to 42.2%). The response rates were normally distributed (Figure 29, overleaf). Using a Chi squared test for observed and expected responses at each medical school, we found significant variability in response rate by medical school (χ^2=121.3; p<0.001).

Figure 29 Distribution of response rates by medical school



From the appearance of Figure 29, it can be seen that there is an outlier. This was Edinburgh (with a response rate lying outside 2 standard deviations of the mean). This was expected, because Edinburgh deanery had declined to participate in the study (Table 21, overleaf). The 16% of Edinburgh graduates who responded were working outside the Edinburgh deanery.

Table 21 Response rates by medical school

	Medical Schools	Number of respondents	Number of graduates in 2004 (HEFCE figures)	Response rate (%)
Outlier	Edinburgh	35	218	16.1
Below 95% CI	St George's	70	212	33
	Dundee	47	138	34.1
	RFUCMS	126	367	34.3
	Oxford	37	107	34.6
	Liverpool	74	208	35.6
Inside 95% Confidence Interval	Cambridge	47	129	36.4
	Wales	70	191	36.6
	GKT	136	370	36.8
	Sheffield	71	193	36.8
	Imperial	99	261	37.9
	Nottingham	75	198	37.9
	Newcastle	80	199	40.2
	Belfast	71	175	40.6
	Southampton	61	150	40.7
	Bristol	53	129	41.1
	Leicester	100	240	41.7
Above 95% CI	Queen Mary	101	230	43.9
	Manchester	142	317	44.8
	Glasgow	87	188	46.3
	Leeds	92	194	47.4
	Birmingham	112	230	48.7
	Aberdeen	85	161	52.8

Female PRHOs were significantly more likely to respond (41.9% vs 35.2%; p<0.001) (Table 22). After excluding Edinburgh graduates, there were no significant differences in response rate by region or method of distribution.

Table 22 Response rates by gender, region and method of distribution

	Response rate	p (χ2)
Gender	35.2% men, 41.9% women	p<0.001
Method of distribution	39.4% via PECs, 36.9% by post	p=0.2
Region*	39.5% England	p=0.1
	36.0% Scotland	p=0.1
	36.7% Wales	p=0.5
	40.6% Ireland	p=0.7
	36.9% London	p=0.1

*** In each case the response rate for a single region, e.g. Scotland, has been compared to the response rate for all other regions combined. PEC = Postgraduate education centre.**

There was nothing in the data to suggest that there was an interaction between answering the questionnaire and feeling well (or poorly) prepared: the correlation coefficient between the response rate for each medical school and the mean preparedness for each medical school was 0.02 (n=23; p=0.3).

The commonest reason given for non-participation by Postgraduate Education Centres (PECs) was that they also had to distribute Foundation Year pilot project questionnaires

(see section 3.2.3. for description of Foundation Year). There was no statistically significant difference in response rates from postgraduate education centres (PECs) with and without Foundation Year Pilot projects (RR 37.4% vs 37.8%; t (217) = -0.8; p=0.9). Neither was there any significant correlation between the size of the PECs and the response rates (r=-0.04; n=219; p=0.5).

Apart from under-representation of males and Edinburgh graduates, we could not find any evidence of systematic bias in the responses.

5.3.3 The reliability of the questionnaire

The split half reliability of the questionnaire was 0.75 (Spearman-Brown coefficient), which is adequate, since a coefficient of above 0.7 is acceptable [173]. See also section 3.4.6 page 68.

5.3.4 Demographics

40.8% of the respondents were male and 57.7% female (1.5% missing data). 88.9% of the respondents were UK graduates and 9.6% were graduates from medical schools outside the UK (1.6% missing). 11.2% of the respondents had been graduate entry medical students.

Of the UK graduates, 97.6% graduated in 2004 and 1.1% in 2005 (Figure 30, overleaf). Of the non-UK graduates, only 17.1% graduated in 2004 or 2005, and year of graduation ranged from 1986 to 2005 (Figure 31, overleaf). These differences are expected, because non-UK graduates have to work as PRHOs before they can register with the GMC, even if they have qualified from medical school many years earlier.

Figure 30 Year of graduation: UK graduates

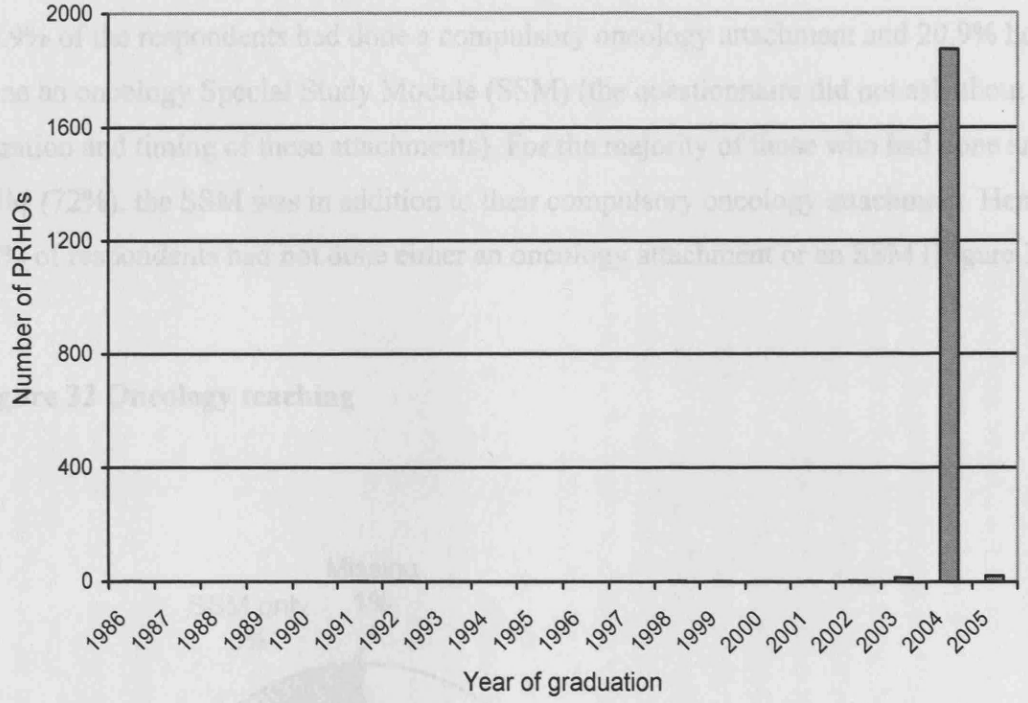
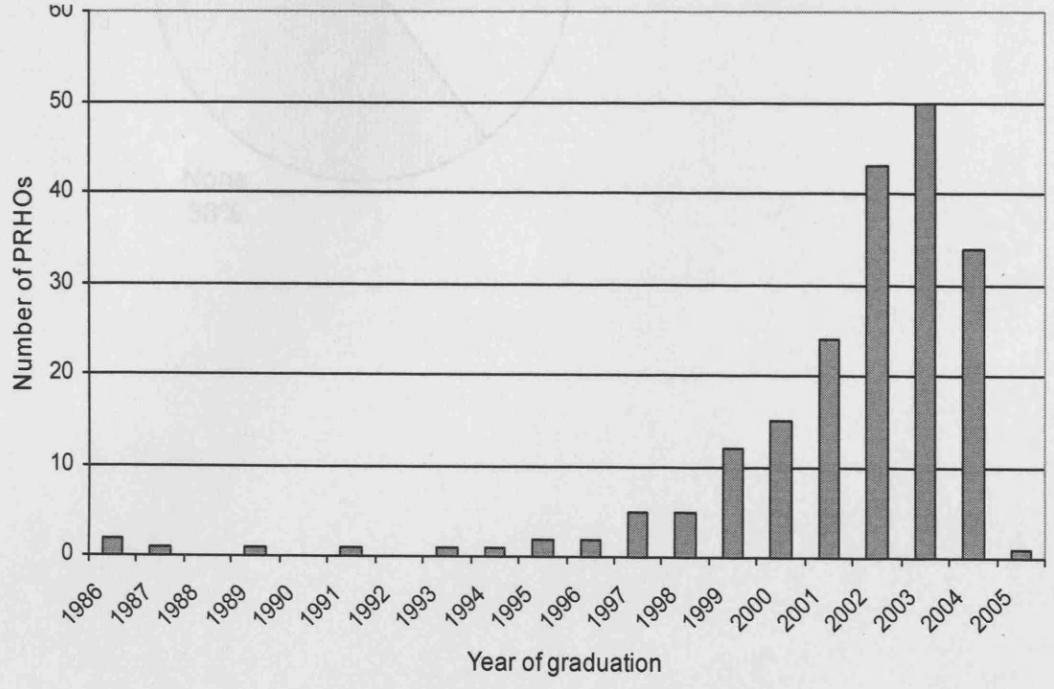


Figure 31 Year of graduation: non-UK graduates

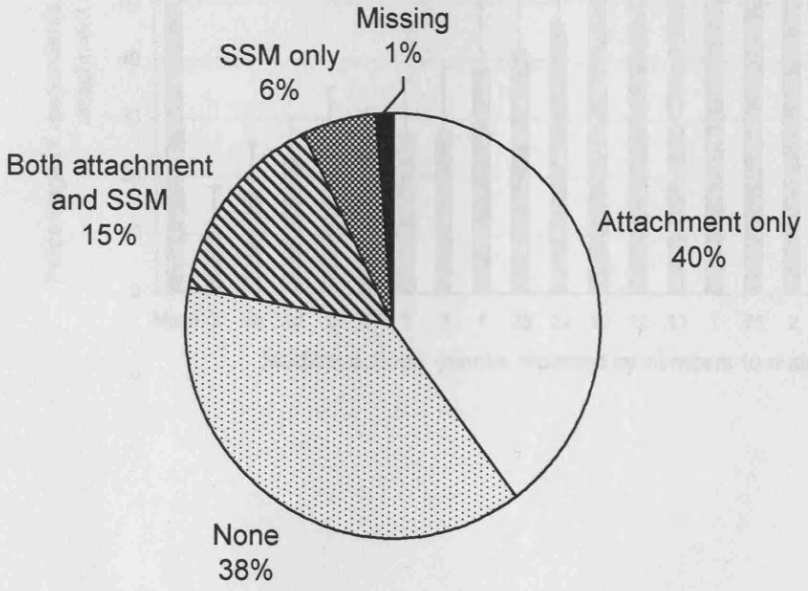


5.4 Oncology teaching

5.4.1 The amount of oncology teaching

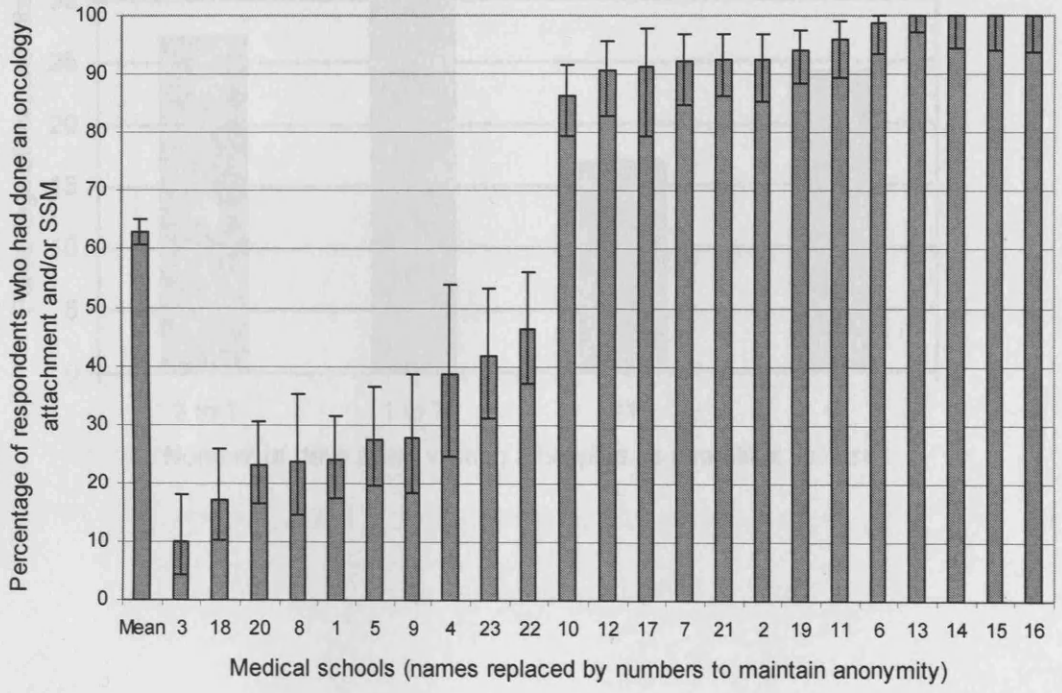
54.9% of the respondents had done a compulsory oncology attachment and 20.9% had done an oncology Special Study Module (SSM) (the questionnaire did not ask about the duration and timing of these attachments). For the majority of those who had done an SSM (72%), the SSM was in addition to their compulsory oncology attachment. Hence, 38% of respondents had not done either an oncology attachment or an SSM (Figure 32).

Figure 32 Oncology teaching



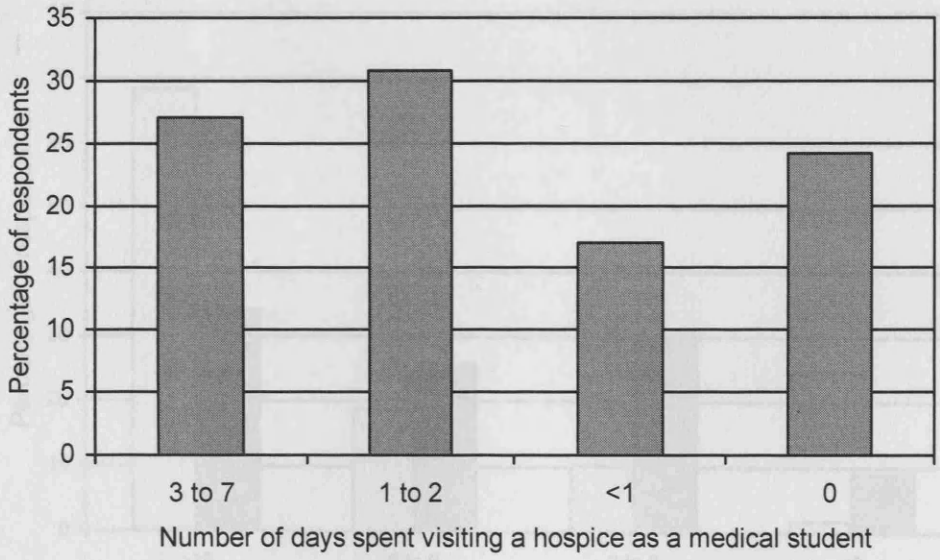
There was significant variability in oncology teaching by medical school: at one school, the percentage of respondents who had done an oncology attachment was 10% whilst at four it was 100% (Figure 33).

Figure 33 Variability in oncology teaching by medical school



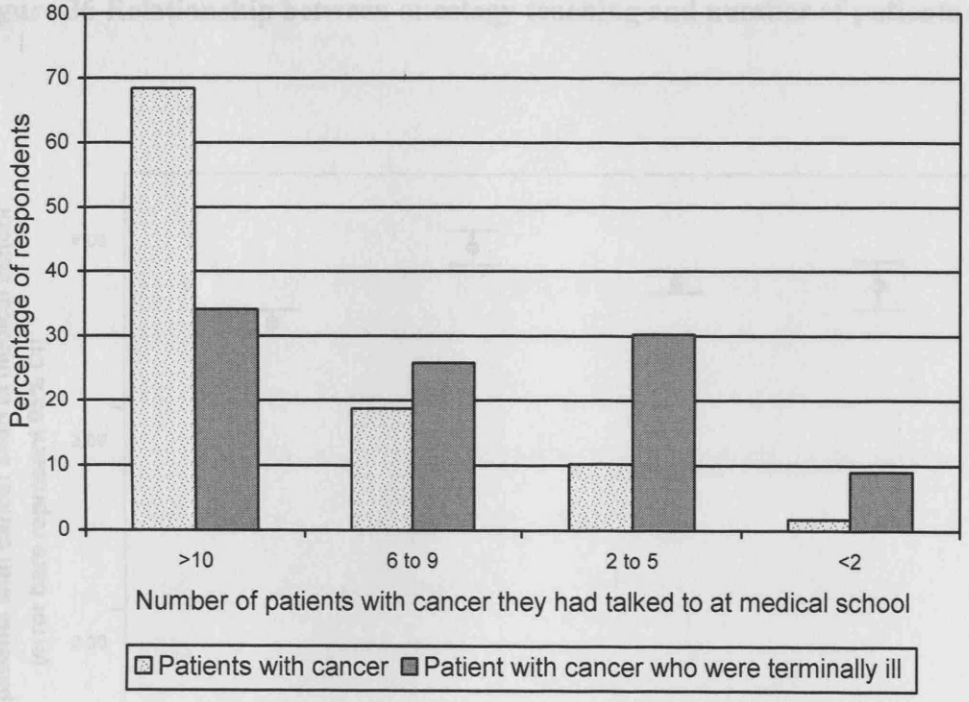
75.6% of respondents had visited a hospice whilst at medical school, and the median duration of the visit was 1 - 2 days (Figure 34).

Figure 34 Hospice visits



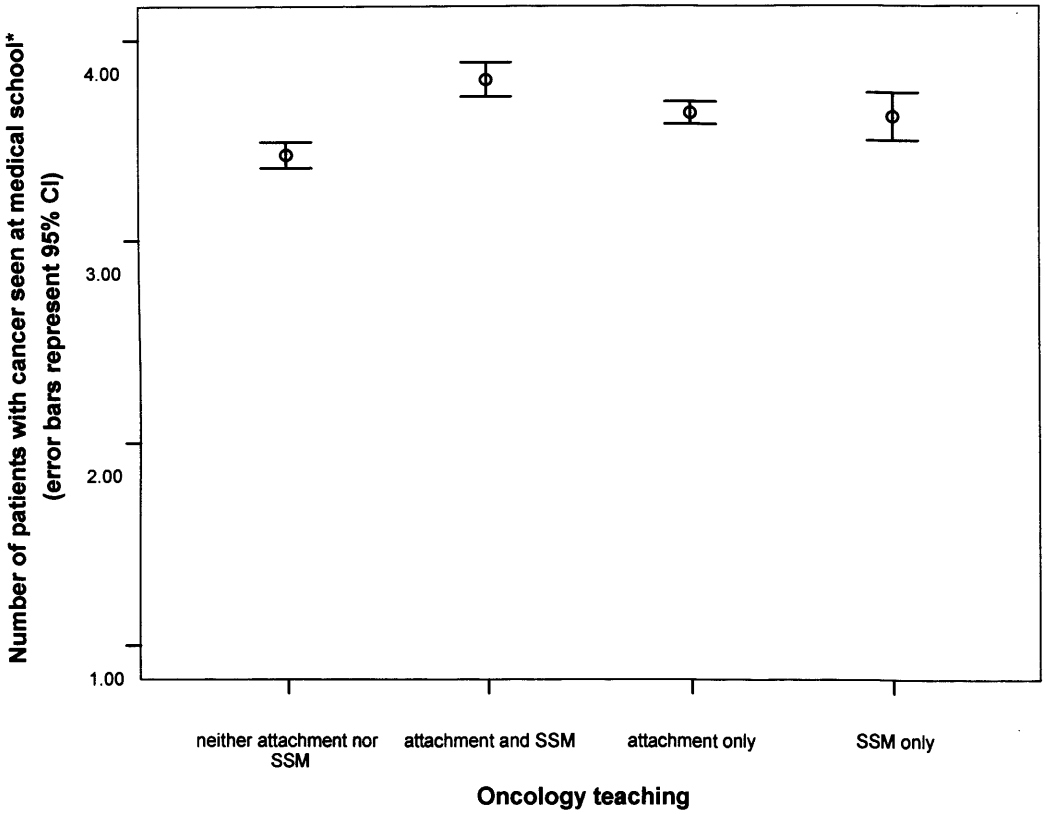
A total of 30% of respondents recalled talking to fewer than 10 patients with cancer at medical school (Figure 35).

Figure 35 Exposure to patients with cancer



PRHOs who had done an oncology attachment had talked to more patients with cancer (χ^2= 49.8; df = 3; p<0.001) (Figure 36). There was also a statistically significant correlation between the number of days the PRHOs had spent in a hospice, and the number of terminally ill patients with cancer they had seen (r=0.216, n=2042; p<0.001).

Figure 36 Relationship between oncology teaching and number of patients seen



*** The y axis is on a scale of 1 to 4, where 1=<2 patients, 2=2-5, 3=6-9 and 4=>10**

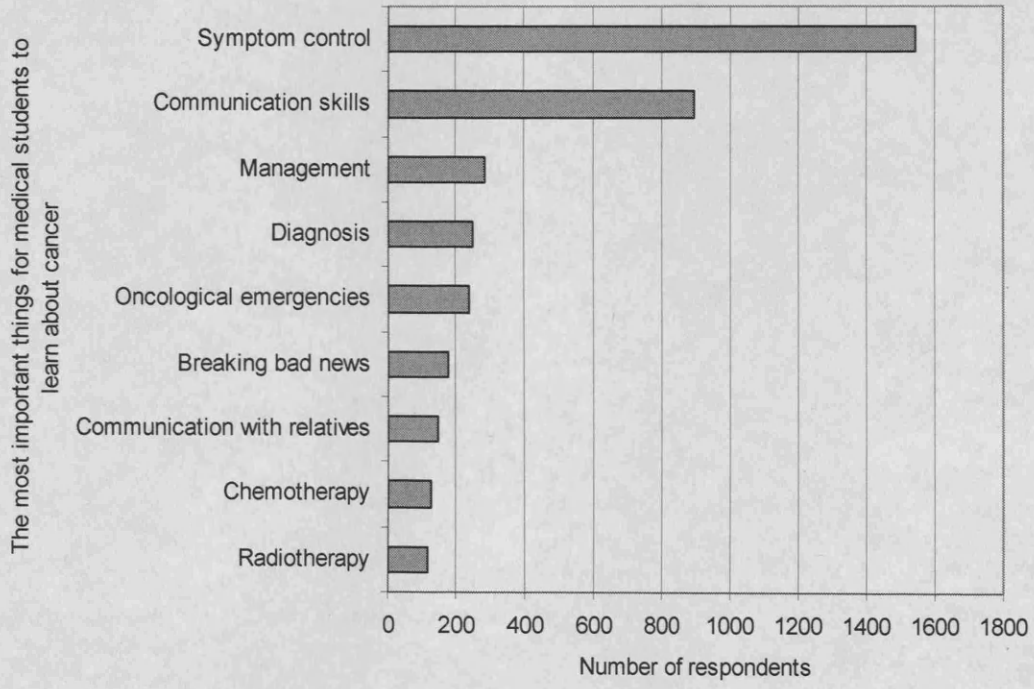
5.4.2 PRHOs' views about their oncology teaching

We asked the PRHOs for their opinions about their oncology teaching. 66% of respondents agreed with the statement *'I learnt a lot about cancer from the patients themselves'* (1343/2024; 95% CI 64.3-68.4%). Only 11.7% agreed with the statement

'medical students were kept away from patients with cancer' (239/2036; 95% CI 10.4-13.2%). 75% agreed with the statement *'the communication skills teaching we had helped prepare me for looking after patients with cancer'* (1530/2044; 95% CI 72.9-76.7%).

The aspects of oncology which the PRHOs thought it was most important to learn at medical school were *'symptom control'* (n=1542) and *'communication skills'* (n=896). They also wanted to be taught about *'management'* (n=288), *'diagnosis of cancer'* (n=249), and *'oncological emergencies'* (n=242) (Figure 37).

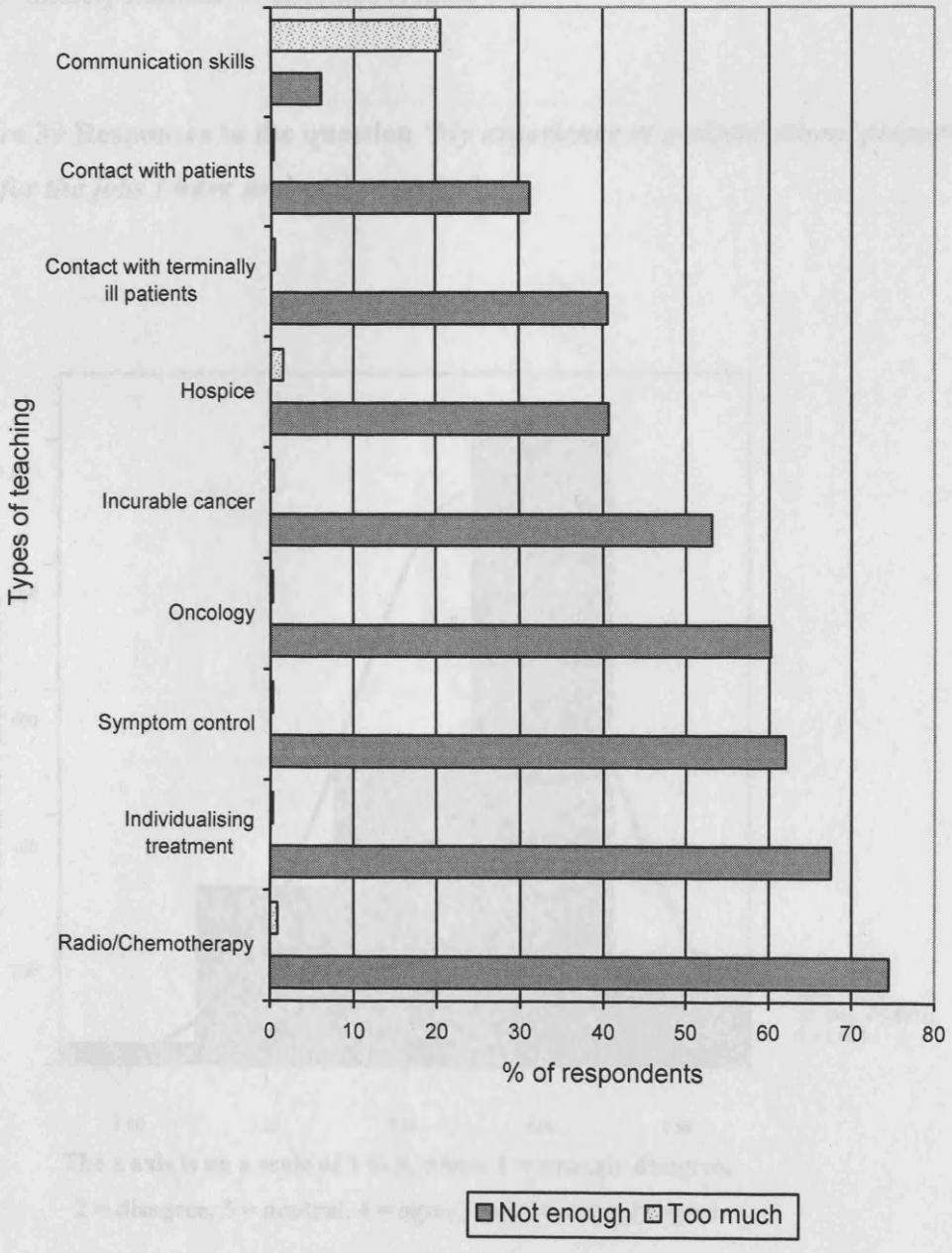
Figure 37 Free text responses to the question *'Based on your experience as a house officer, [what are] the two aspects of oncology which you think it is most important for medical students to learn?'*



The aspect of oncology which PRHOs thought was least important to learn was *'the details'* (n=692). When respondents mentioned *'details'*, it was usually in conjunction with something else, for example *'details of chemotherapy'* (n=504), *'details of radiotherapy'* (n=276), *'details of cancer treatment'* (n=99).

The respondents felt they hadn't had enough teaching about the following: radiotherapy and chemotherapy (74.5%, 1529/2053); how to individualise treatment (68.9%,1404/2031); symptom control (61.7%, 1267/2052); and oncology in general (61.0%, 1252/2054) (Figure 38). 19.4% felt they had had too much teaching about communication skills (398/2053) (Figure 38).

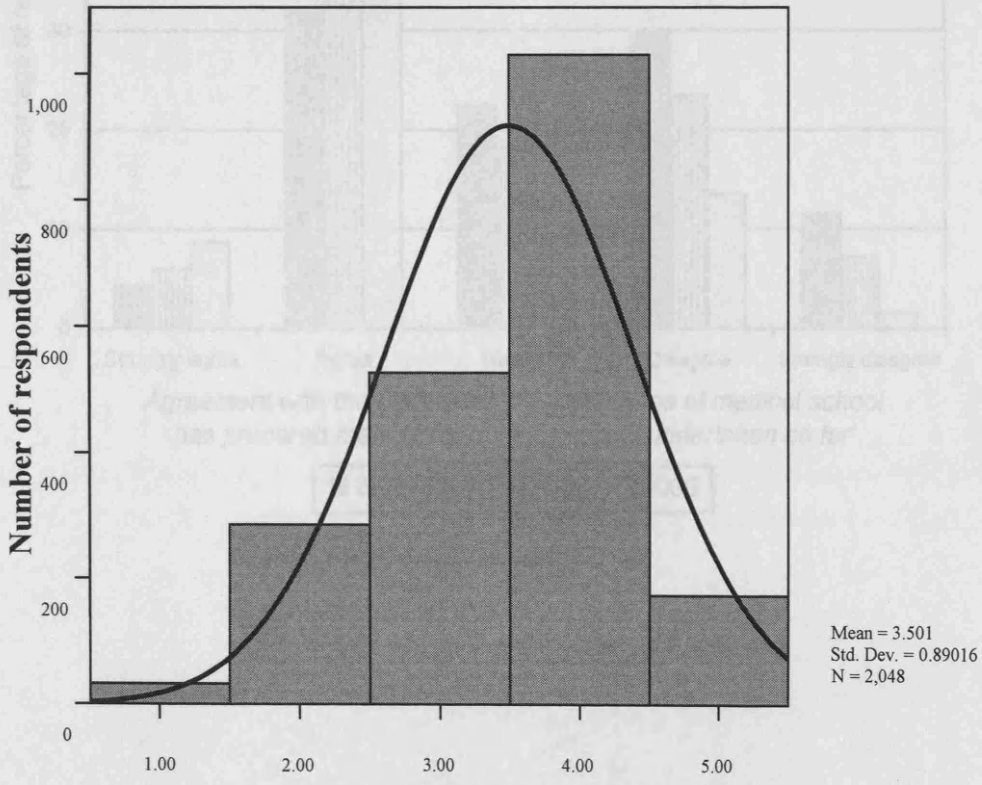
Figure 38 Responses to the question *'For each of the following, please state whether you received not enough, enough, or too much of this type of teaching to prepare you for your house officer year'.*



5.5 Preparedness for starting work as a doctor

This section reports on the responses to Question 9, which invited respondents to score their agreement with the statement '*My experience at medical school prepared me well for the jobs I have undertaken so far*' on a five point Likert scale, from strongly agree to strongly disagree. I have firstly described the PRHOs' preparedness for starting work, and then described the correlations between their preparedness and other factors such as their personality (see also Table 18 page 136). Preparedness for the PRHO year was approximately normally distributed (Figure 39).

Figure 39 Responses to the question *'My experience at medical school prepared me well for the jobs I have undertaken so far'*

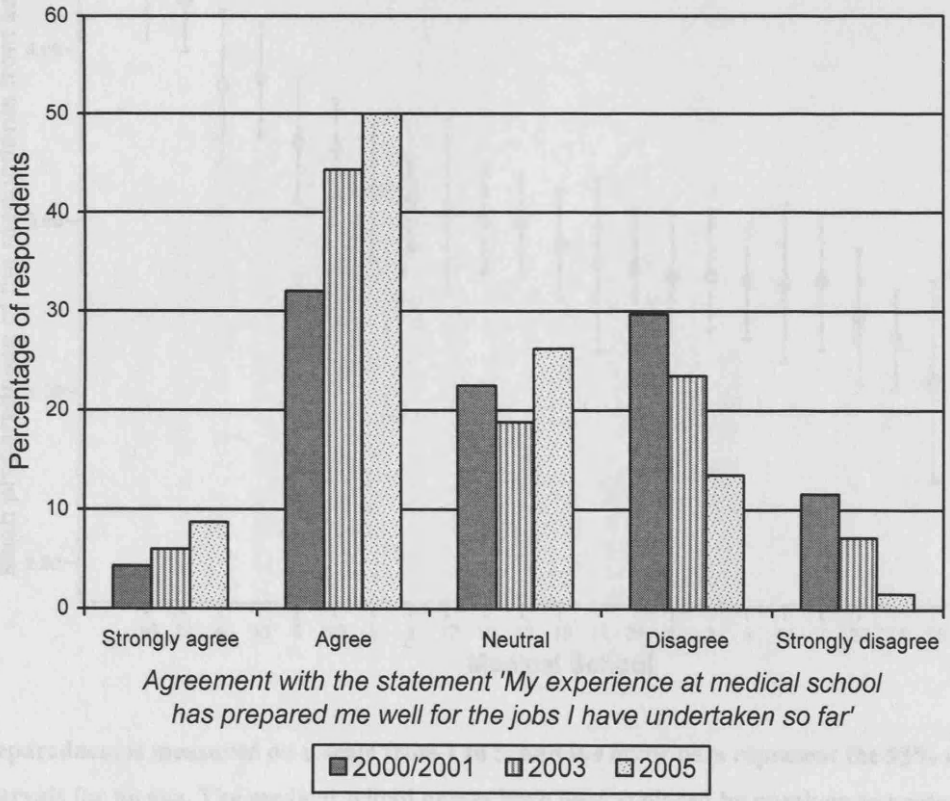


The x axis is on a scale of 1 to 5, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree

5.5.1 Changes in preparedness since 2000/2001

Preparedness has improved since 2000/2001 (Figure 40). The data for 2000, 2001 and 2003, which were obtained by personal communication from Professor Goldacre, confirmed a clear trend to improved preparedness: in 2000/2001 36.3% of PRHOs strongly agreed or agreed that their training had prepared them well, in 2003 it was 50.3% and in 2005 it was 58.5% (χ^2= 10.3; df=2; p=0.006).

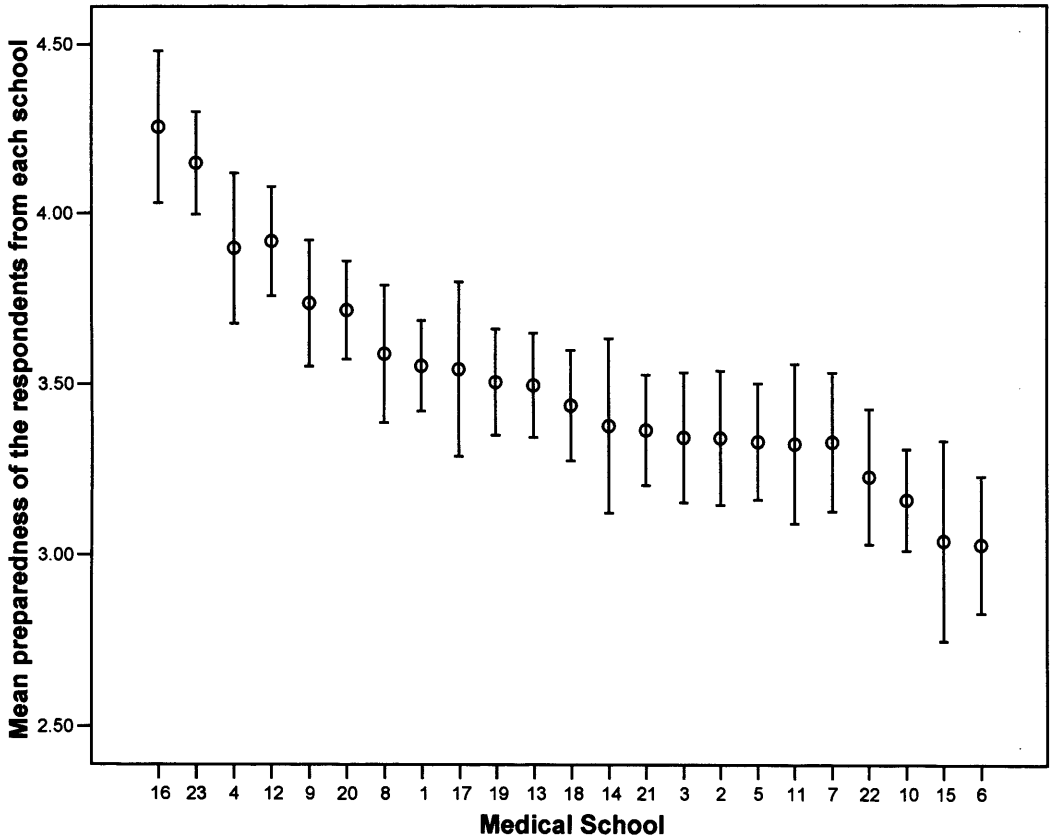
Figure 40 Changes in preparedness since 2000/2001



5.5.2 Variation related to medical school attended

Substantial and significant variation in preparedness between doctors from different medical schools, which was reported previously by Goldacre *et al* (2003)[195], was still present amongst our responders (Figure 41). In this section, I describe this variation and explore some of the possible reasons for it.

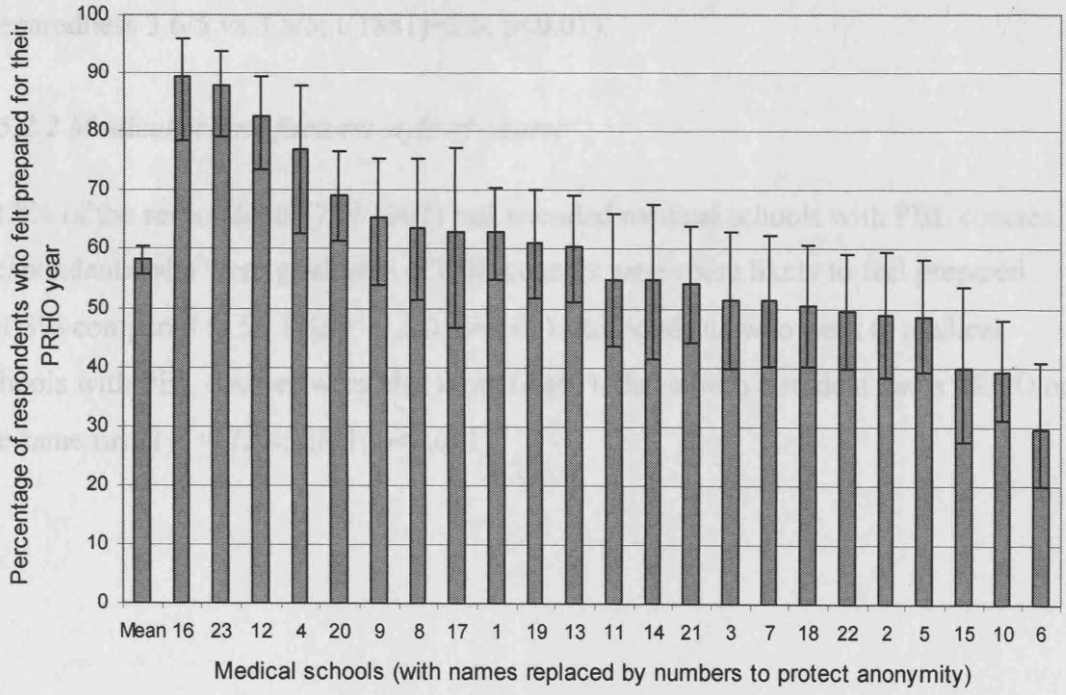
Figure 41 Hi-Lo graph of preparedness at each medical school.



Preparedness is measured on a scale from 1 to 5, and the error bars represent the 95% confidence intervals for means. The medical school names have been replaced by numbers to protect anonymity.

The percentage of graduates who felt prepared for starting work varied from 30% at medical school 6 to 89% at medical school 16 (Figure 42). Graduates of medical schools 6, 10 and 15 were significantly less likely to feel prepared for their PRHO year, with 95% confidence intervals that did not overlap with the mean. Graduates of medical schools 20, 4, 12, 23 and 16 were significantly more likely to feel prepared. Results were unchanged whether analysed by mean preparedness (Figure 41) or by percentage who felt prepared (Figure 42), but Figure 42 illustrates the size of this effect upon the graduates of each medical school.

Figure 42 Hi-Lo graph of the percentage of graduates of each medical school who felt well prepared for starting work as a doctor



The error bars represent the 95% confidence intervals for means.

5.5.2.1 Medical school factors: shadowing and other attachments

Shadowing opportunities were one possible cause for variation in preparedness between doctors from different medical schools. 94.7% (1798/1899) of UK PRHOs had done a period of house officer shadowing, so only 101 UK PRHOs had not shadowed. Preparedness was higher in respondents who had done PRHO shadowing (58.6% compared to 48.5%; $\chi^2 = 4.0$; p=0.05). There was a very low but statistically significant correlation between the length of the shadowing attachment and how prepared the PRHOs felt (r=0.105; n=1873; p<0.001).

37.7% (713/1889) had been on the same firm as a student and as a PRHO. PRHOs who had been a student and a PRHO on the same firm felt slightly better prepared (mean preparedness 3.6/5 vs 3.5/5; t(1881)=2.6; p<0.01).

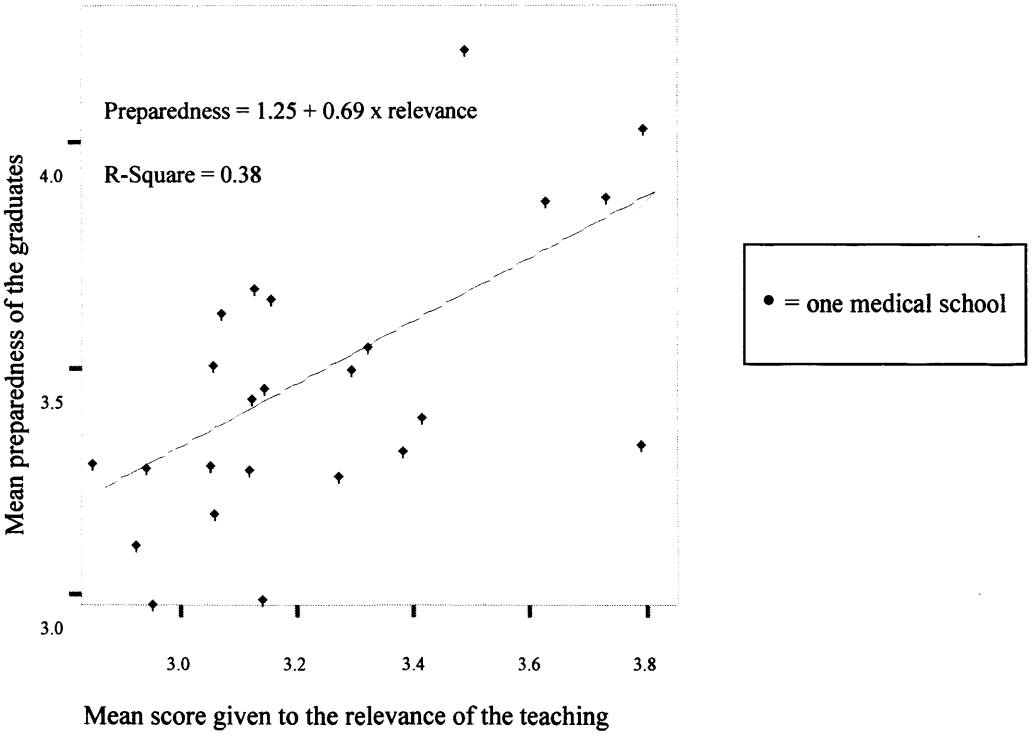
5.5.2.2 Medical school factors: style of course

38.8% of the respondents (739/1907) had attended medical schools with PBL courses. Respondents who were graduates of PBL courses were more likely to feel prepared (61.3% compared to 56.1%; $\chi^2 = 5.0$; p=0.03). Respondents who went to medical schools with PBL courses were also more likely to have been a student and a PRHO on the same firm ($\chi^2 = 72.4$; df=1; p<0.001).

5.5.2.3 Medical school factors: teaching and role models

44.7% (914/2044) of PRHOs agreed or strongly agreed with the statement *'the teaching was relevant to real life as a doctor'*, and high agreement with this statement correlated with feeling well prepared (r=0.36; p<0.001; n=2031). I have plotted a scatter graph to illustrate the relationship between relevant teaching and preparedness (Figure 43).

Figure 43 Correlation between relevant teaching and preparedness



65.9% (1345/2041) of respondents agreed or strongly agreed that they could identify particular doctors who were role models during their training. Agreement with the statement *'I could identify particular doctors who were role models during my training'* was correlated with feeling well prepared, but the correlation was much smaller than that for relevant teaching (r=0.10; p<0.001; n=2028).

5.5.2.4 Medical school factors: publicly available league tables

There has been media interest in comparing different medical schools: The Times and The Guardian both publish league tables of universities and of medical schools [199;200]. I looked for correlations between preparedness and the features listed in The Times' and The Guardian's league tables, for example the staff to student ratio. This was not a hypothesis driven analysis, but was felt to be valuable, in light of the interest that ranking medical schools has generated.

There were no significant correlations between preparedness and any of the rankings found in The Times' or The Guardian's university guides. The rankings I examined included The Guardian's overall score ($r=0.14$; $n=23$; $p=0.5$), The Times' overall score ($r=0.27$; $n=23$; $p=0.2$), the staff to student ratio ($r=0.004$; $n=23$; $p=1$), the mean A-level scores of the students ($r=-0.20$; $n=23$; $p=0.4$)*, and the results of the medicine Research Assessment Exercise ($r=0.06$; $n=23$; $p=0.8$) (figures obtained from The Times' website).

* Where these were positively skewed, e.g. A-level scores, the square root was used.

5.5.2.5 Summary of medical school factors

Variation in preparedness between doctors from different medical schools can be explained to some extent by the relevance of the teaching, the type of course, and house officer shadowing.

The GMC suggested in their document *Tomorrow's Doctors* (1993)[3] that medical schools should place more emphasis on preparedness for practice. In response, all UK medical schools implemented new courses. In order to investigate whether these changes had had a measurable effect upon preparedness, I wanted to look at changes in preparedness over time. I obtained the date when each school changed it's course from the GMC website (ref http://www.gmc-uk.org). I also obtained from Michael Goldacre both published and unpublished data from 2000/2001 and 2003. As described above in section 5.5.1, Michael Goldacre's group have previously implemented questionnaires asking two cohorts of PRHOs an identical question to our question 9. Michael Goldacre and Trevor Lambert (a statistician from Oxford University) collaborated on the joint analysis that I describe over the next 2 pages.

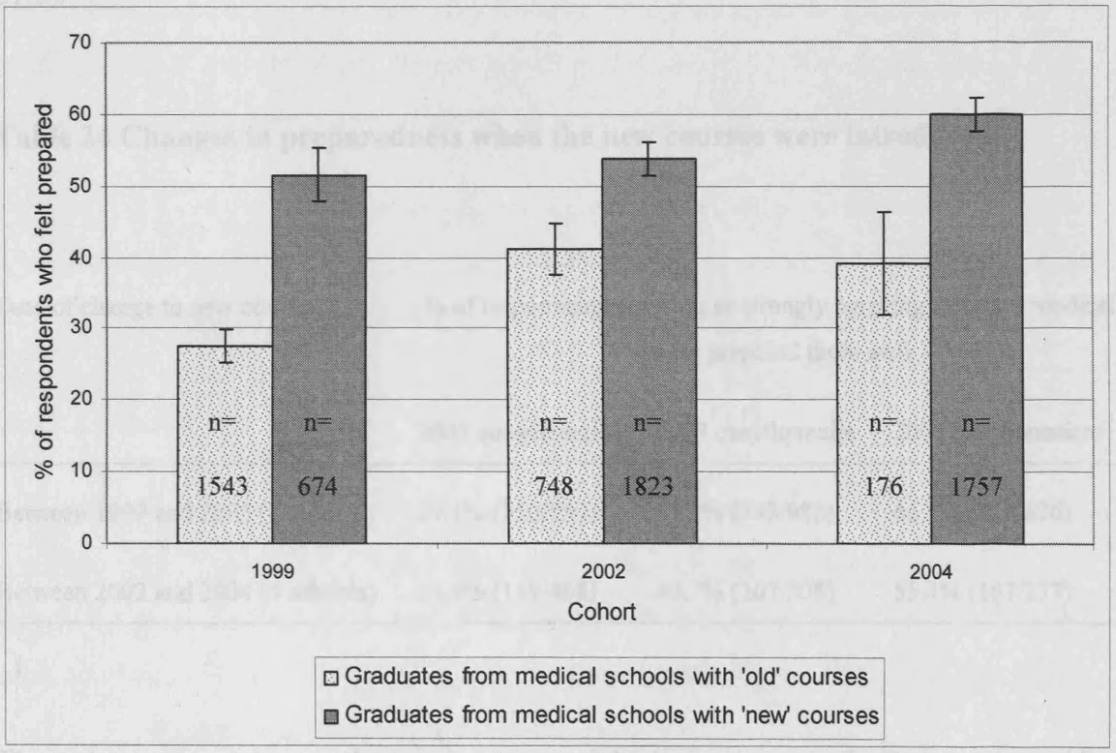
Medical schools implemented new courses between 1998 and 2006 (where implementation is defined as meaning that the majority of graduating doctors had undergone the new course) (Table 23). At two medical schools (shown in the last column of Table 23) course changes were gradual.

Table 23 Dates when the medical schools changed their courses

	Dates when the new courses became fully implemented				
	Before 1999	Between 1999 and 2002	Between 2002 and 2004	After 2004	Course changes gradually implemented over a number of years
Number of medical schools	7	8	4	2	2

I analysed the results of the Goldacre 2000 and 2003 surveys, and my own 2005 survey, with respect to the dates shown in Table 23. Within each cohort (2000, 2003 and 2005), there were respondents from schools with new courses and respondents from schools with unchanged or 'old' courses. The respondents from schools with new courses felt consistently better prepared (Figure 44).

Figure 44 Comparison of mean preparedness of graduates from schools with new and old courses



The error bars represent the 95% confidence intervals.

This figure excludes the respondents from the two schools with ongoing course changes. To see how many schools each error bar represents, compare with Table 23 as follows: In the 2000 cohort, there are 7 medical schools with new courses and 14 with old courses (8 + 4 + 2). In the 2003 cohort there are 15 medical schools with new courses (7 + 8) and 6 with old courses (4 + 2). In the 2005 cohort there are 19 schools with new courses (7 + 8 + 4) and 2 with old courses.

12 medical schools implemented new courses between 1999 and 2004 (8 between 1999 and 2002 and 4 between 2002 and 2004 – see Table 23). Surveys had therefore been undertaken of graduates of both the new and the old courses run by these 12 schools. Table 24 shows that for the schools which changed between 1999 and 2002, there was a pronounced increase in preparedness between the 2000 and 2003 questionnaires (increase 28.1%; 95% CI 23.7 – 32.4) and a smaller increase between the 2003 and 2005 questionnaires (increase 9.2%; 95% CI 4.8-13.8%).This is as one might expect. For the four schools that changed course between 2002 and 2004 the picture is less clear: there was 15.3% increase between the 2000 and 2003 questionnaires (95% CI 9.5 – 21.1) and a 14.7% increase between the 2003 and 2005 questionnaires (95% CI 7.9 – 21.6).

Table 24 Changes in preparedness when the new courses were introduced.

Date of change to new course	% of respondents agreeing or strongly agreeing that their medical school prepared them well		
	2000 questionnaire	2003 questionnaire	2005 questionnaires
Between 1999 and 2002 (8 schools)	29.1% (250/859)	57.2% (563/985)	66.4% (549/826)
Between 2002 and 2004 (4 schools)	25.4% (119/468)	40.7% (207/508)	55.4% (187/337)

These data support the conclusion that some of the improvements that have occurred in preparedness are due to course changes that were implemented in response to the GMC document *Tomorrow's Doctors* [3].

5.5.3 Variation related to PRHOs' individual attributes

Preparedness is a subjective measure and we must therefore consider the effect of individual characteristics of PRHOs such as personality and age upon their preparedness (see Section 1.2.2.3 page 27).

5.5.3.1 Age and gender

PRHOs who had been graduate entrants to medical school (and therefore were at least 3 years older) did not feel significantly more prepared than those who had entered medical school straight after A-levels (mean preparedness 3.6/5 vs 3.5/5; $t(2037)=1.2$; $p=0.2$). This calculation was unchanged by the inclusion of non-UK graduates.

Female PRHOs were over-represented amongst respondents (see section 5.3.2 page 147), but there were no significant gender differences in preparedness: male and female PRHOs felt similarly prepared (3.5/5 vs 3.5/5; $t(1892)=-0.72$; $p=0.5$).

5.5.3.2 Personality

PRHOs' personality traits were correlated with their preparedness: high agreeableness ($r=0.08$; $n=2017$; $p<0.01$), conscientiousness ($r=0.14$; $n=2024$; $p<0.001$) and extraversion ($r=0.15$; $n=2015$; $p<0.001$) correlated with high preparedness, however high neuroticism correlated with low preparedness ($r=-0.16$; $n=2012$; $p<0.001$). There was no significant correlation between openness and preparedness.

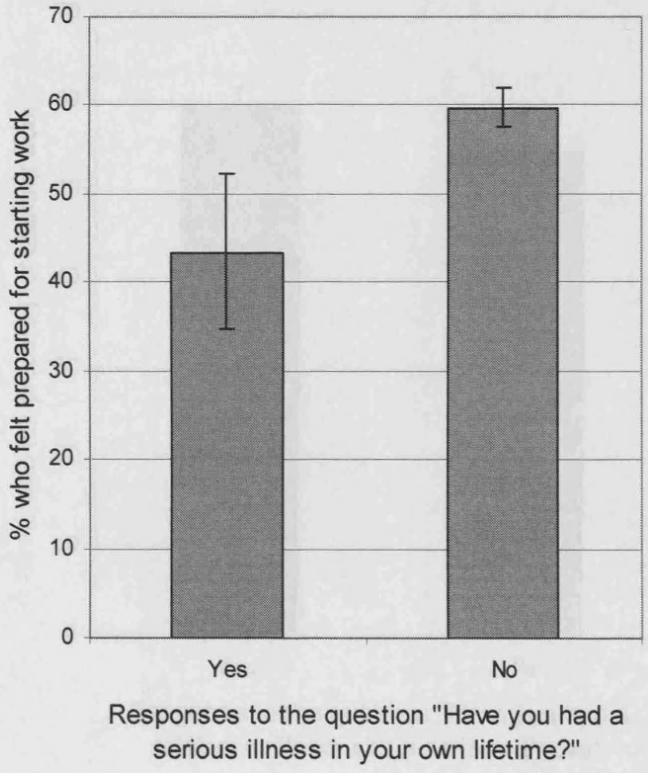
In a stepwise multiple regression, 4.6% of the variation in preparedness could be predicted on the basis of personality ($R=0.22$, $R^2=0.047$, $p<0.001$). The three personality traits which correlated significantly with preparedness once the effect of the other personality traits had been partialled out were extraversion ($Beta=0.11$; $p<0.001$), neuroticism ($Beta=-0.12$; $p<0.001$), and conscientiousness ($Beta=0.08$; $p=0.04$).

118 respondents failed to complete the personality instrument. Mean preparedness was 3.5/5 for both responders and non-responders; $t(2046)=0.29$; $p=0.8$.

5.5.3.3 Personal experiences of ill health

5.9% of the respondents had had a serious illness in their own lifetime (95% CI 4.9-7%), and were less likely to feel prepared for the PRHO year than their colleagues who had never been ill (Figure 45).

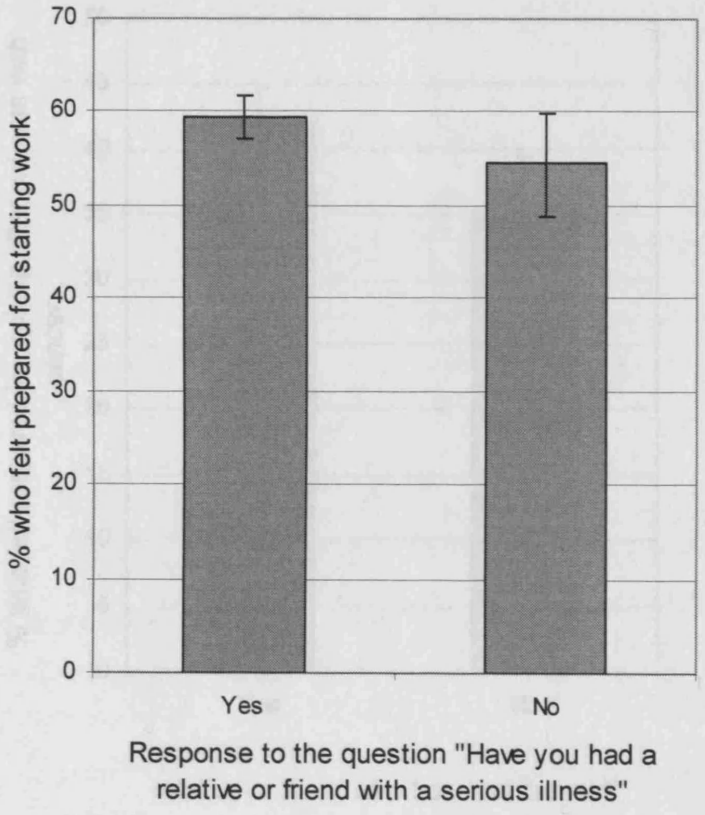
Figure 45 The effect upon preparedness of having had a serious illness



Error bars represent 95% confidence intervals

84.7% (1742/2062) of respondents had experienced ill health in a close friend or relative (95% CI 83.1-86.2%). There was a non-significant trend for these PRHOs to feel better prepared for their PRHO year (Figure 46).

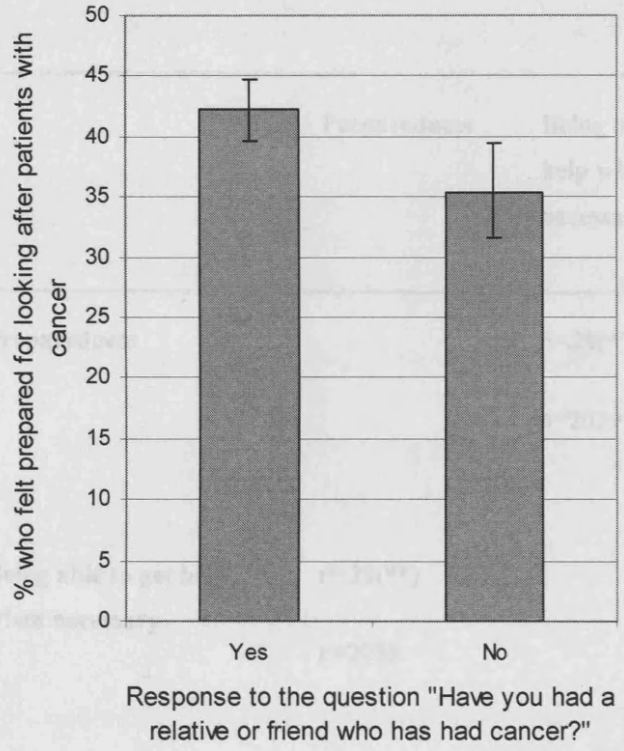
Figure 46 The effect upon preparedness of having had a relative or friend who was seriously ill



Error bars represent 95% confidence intervals

PRHOs who had had a relative or friend with cancer were significantly more likely to feel prepared for specifically looking after patients with cancer (Figure 47), suggesting that the trend seen in Figure 46 may represent a real effect.

Figure 47 The effect of having a relative or friend who has had cancer upon preparedness



Error bars represent the 95% confidence intervals

In a multiple linear regression, there was a negative correlation between personal serious illness and preparedness ($B=-0.24$; $p<0.01$), and a small and non-significant positive correlation between experience of ill health in a friend/relative and preparedness ($B=0.11$; $p=0.06$), suggesting that these effects are independent and opposite.

5.5.4 Variation related to PRHOs' experiences at work

We asked the PRHOs about their experiences since starting work. Preparedness correlated with agreement with the following three statements: *'As a house officer I found it easy to get help when I needed it'; 'I felt well supported by the nursing staff';* and *'I felt well supported by my senior colleagues'* (Table 25).

Table 25 Correlation matrix for experiences at work

	Preparedness	**Being able to get help when necessary**	**Feeling supported by senior colleagues**	**Feeling supported by the nursing staff**
Preparedness		r=.29(**)	r=.21(**)	r-.17(**)
		n=2039	n=2035	n=2041
Being able to get help when necessary	r=.29(**)		r=.68(**)	r=.32(**)
	n=2039		n=2034	n=2038
Feeling supported by senior colleagues	r=.21(**)	r=.68(**)		r=.34 (**)
	n=2035	n=2034		n=2033
Feeling supported by the nursing staff	r=.17(**)	r=.32(**)	r=.34(**)	
	n=2041	n=2038	n=2033	

** = p<0.01

I performed a multiple regression, because of the collinearity amongst the variables as demonstrated in Table 25. Respondents' experiences at work predicted 8.7% of the variation in their preparedness (R=0.30; R2=0.087; $p<0.001$), and the variables which were independently correlated with preparedness were 'being able to get help' (Beta=0.25; $p<0.001$) and 'feeling supported by the nursing staff' (Beta=0.09; $p<0.001$).

5.5.5 Multiple regression to predict preparedness for starting work as a doctor

A number of variables were univariately correlated with preparedness for starting work as a doctor:

- Characteristics of the medical school (section 5.5.2)
- A shadowing attachment ($\chi^2=4.0$) and its length (r=0.1)
- Being a student and a PRHO on the same firm (t=2.1)
- Teaching that was relevant to life as a doctor (r=0.4)
- Role models (r=0.1)
- PBL course (t=3.0; $p<0.01$)
- Course had been redesigned in light of *Tomorrow's Doctors* (t=5.6)
- The PRHOs' individual attributes (section 5.5.3)
- Personality traits: extraversion (r-0.2), conscientiousness (r=0.1), and neuroticism (r=-0.2)
- Personal experience of ill health ($p>0.01$)
- Experiences at work (section 5.5.4)
- Finding it easy to get help (r=0.3)
- Feeling supported by the nursing staff (r=0.2)

All these predictor variables were univariately correlated with preparedness, but some are also correlated with each other. For example, as one might expect, PRHOs with higher neuroticism scores reported they found it harder to get help ($r=0.25$; $n=2005$; $p<0.001$). Because of this collinearity between variables, I performed a multiple regression, entering the variables in chronological order. For this analysis, only UK graduates from known medical schools were included. In the resulting regression model, all the above variables were significantly correlated with preparedness except 'role models' and 'being a student and a PRHO on the same firm', therefore these two variables were excluded from the model. The final model, shown in Table 26 overleaf, therefore included the following variables, in order of Beta weights (Beta weights represent the standardised correlation coefficients):

- Teaching that was relevant to life as a doctor (Beta = 0.33)
- Finding it easy to get help (Beta = 0.19)
- Length of shadowing attachment (Beta = 0.09)
- Course had been redesigned in light of *Tomorrow's Doctors* (Beta = 0.09)
- The personality trait of extraversion* (Beta = 0.08)
- Feeling supported by the nursing staff (Beta = 0.06)
- Personal experience of ill health (Beta = 0.05)
- PBL course (Beta = 0.04)

* Extraversion was the only one of the 'big five' personality traits which independently correlated with preparedness. However because all the traits were measured using the same instrument, they were all left in the multiple regression. The non-significant elements have not been reported.

Table 26 Multiple regression model of factors impacting upon preparedness for starting work as a doctor

Predictor variables	Scale upon which predictor was measured	B	Beta	t	p
(Constant)	-	.38	-	1.3	0.2
Personality trait of extraversion	1-15	.04	.08	3.6	<0.01
Personal experience of ill health	Yes or No	.17	.05	2.2	<0.05
PBL course	Yes or No	.08	.04	2.0	<0.05
Course had been redesigned in light of *Tomorrow's Doctors*	Yes or No	.25	.08	3.8	<0.01
Teaching that was relevant to life as a doctor	Likert scale 1-5	.33	.33	15.2	<0.01
Length of shadowing attachment	In weeks	.02	.09	4.3	<0.01
Finding it easy to get help	Likert scale 1-5	.25	.19	8.4	<0.01
Feeling supported by the nursing staff	Likert scale 1-5	.07	.06	2.6	<0.01

The dependent variable is preparedness (on a scale of 1 to 5). B represents the increment in preparedness for every one-point increment of the predictor variables. Beta represents the standardised correlation coefficient, i.e. the coefficients if all predictor variables were measured on the same scale.

24% of the variation in the preparedness was predicted on the basis of 7 factors: personality trait of extraversion; PBL course; course had been redesigned in light of *Tomorrow's Doctors*; teaching that was relevant to life as a doctor; length of shadowing attachment; finding it easy to get help; and feeling supported by the nursing staff (Table

27). I entered an eighth variable - 'medical school' - into the regression model, because I suspected that there were elements of medical school training that impacted upon preparedness, but about which our questionnaire had not enquired. Adding 'medical school' explained a further 4% of the variance (i.e. there was a significant increase in R square*) (Table 27). The final model predicted 28% of the variance in preparedness.

NB because 'medical school' is a categorical variable, B and Beta cannot be quoted.

Table 27 Multiple regression model including medical school

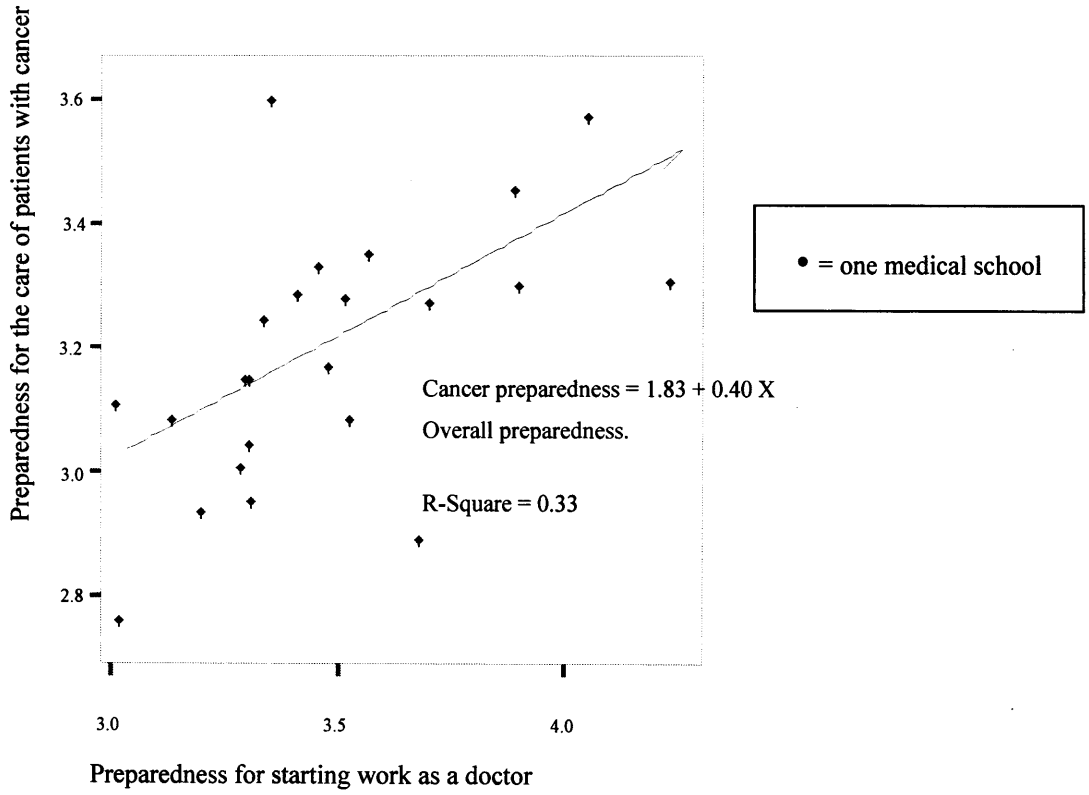
Model	R Square	R Square Change	F Change	Sig. F Change
Personality, PBL course, new course, relevant teaching, length of shadowing, ease of getting help and support from the nursing staff	.24	.24	48.3	<0.01
As above, plus medical school	.28	.04	5.8	<0.01

* R Square approximates to the percentage of the variance explained

5.6 Preparedness for the care of patients with cancer

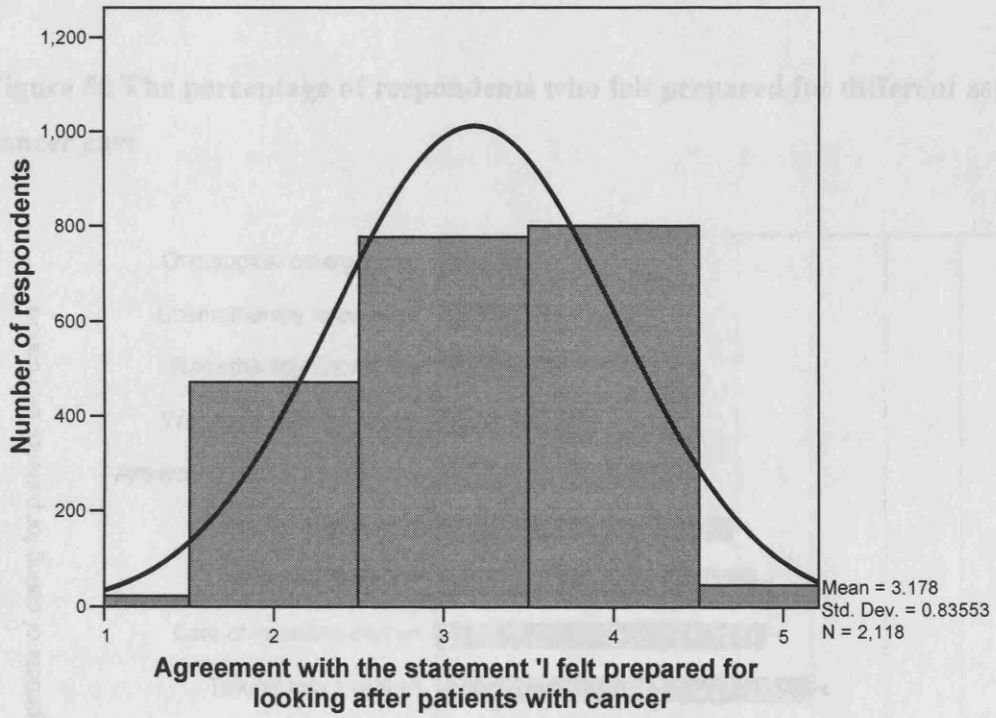
Section 5.5 reported on preparedness for starting work as a doctor. This section reports more specifically on preparedness for the care of patients with cancer, i.e. on questions 10, 11, 12 and 13 of the questionnaire. There is a significant overlap between this section, and the previous section (5.5), as indicated in Table 18 (page 136) and Figure 3 (page 136). As might be expected, we found significant correlation between preparedness for starting work as a doctor and preparedness for caring for patients with cancer ($r=0.34$; $n=2022$; $p<0.001$) (Figure 48).

Figure 48 Correlation between preparedness for starting work as a doctor, and preparedness for caring for patients with cancer



40% of respondents (n=819; 95% CI 38-42%) felt well prepared for looking after patients with cancer, and 23% felt unprepared (n=469; 95% CI 21-25%). The responses were normally distributed (Figure 49). Only 17 PRHOs (0.8%; 95% CI 0.5-1%) said they had no experience of looking after patients with cancer.

Figure 49 Respondents agreement with the statement *'I felt prepared for looking after patients with cancer'*

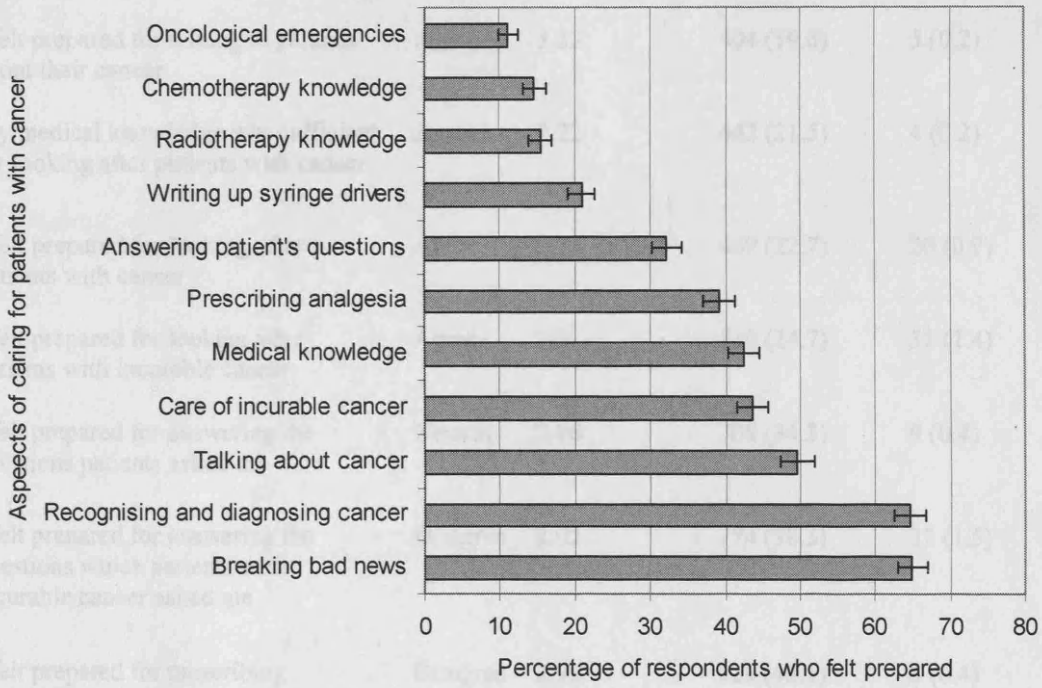


The x axis is on a scale of 1 to 5, where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree

5.6.1 Preparedness for different aspects of cancer care

The questionnaire asked about preparedness for specific aspects of caring for patients with cancer (Figure 50). The majority of PRHOs felt prepared for diagnosing cancer (65%) and breaking bad news (65%). Conversely, few felt prepared for oncological emergencies (11%), knowing about chemo/radiotherapy (15%), and prescribing drugs such as opiates in syringe drivers (21%).

Figure 50 The percentage of respondents who felt prepared for different aspects of cancer care



Error bars represent 95% confidence intervals

The vast majority of respondents had experienced all areas of cancer care during their PRHO year; however, 4.6% (n=99) had had no experience of treating oncological emergencies (Table 28). The results were indistinguishable whether analysed by mean response on the Likert scale or percentage of respondents who disagreed (Table 28).

Table 28 Preparedness for different aspects of cancer care

Statement	Modal answer	Mean answer (scale 1-5)	Number (%) who disagreed	Number (%) with no experience
I felt prepared for breaking bad news	Agree	3.63	231 (11.2)	11 (0.5)
I felt prepared for recognising and diagnosing metastatic cancer	Agree	3.62	243 (11.8)	9 (0.4)
I felt prepared for talking to patients when the possibility of cancer was being investigated	Agree	3.58	270 (13.1)	4 (0.2)
I felt prepared for recognising and diagnosing cancer	Agree	3.53	289 (13.8)	8 (0.4)
I felt prepared to talk to terminally ill patients about their cancer	Agree	3.37	385 (18.7)	20 (0.9)
I felt prepared for talking to patients about their cancer	Agree	3.32	404 (19.6)	5 (0.2)
My medical knowledge was sufficient for looking after patients with cancer	Agree	3.22	442 (21.5)	4 (0.2)
I felt prepared for looking after patients with cancer	Agree	3.18	469 (22.7)	20 (0.9)
I felt prepared for looking after patients with incurable cancer	Agree	3.2	510 (24.7)	31 (1.4)
I felt prepared for answering the questions patients asked me	Neutral	2.96	708 (34.3)	9 (0.4)
I felt prepared for answering the questions which patients with incurable cancer asked me	Disagree	2.92	774 (38.5)	32 (1.5)
I felt prepared for prescribing analgesia	Disagree	2.92	929 (45.1)	8 (0.4)
I felt prepared for prescribing syringe drivers	Disagree	2.45	1299 (63.0)	31 (1.4)
I knew enough about radiotherapy	Disagree	2.39	1371 (66.5)	13 (0.6)
I knew enough about chemotherapy	Disagree	2.37	1379 (66.9)	13 (0.6)
I felt prepared for treating oncological emergencies	Disagree	2.27	1357 (69.4)	99 (4.6)

5.6.1.1 Curable vs *incurable cancer*

There were no systematic differences in PRHOs' preparedness for caring for patients with curable and incurable cancer (Table 29).

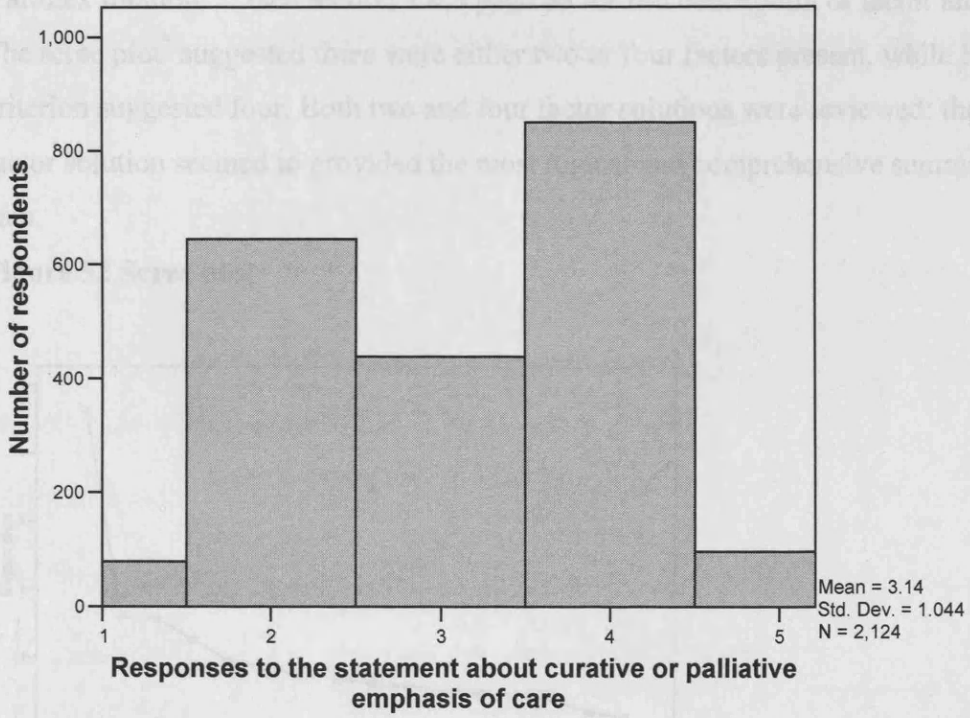
Table 29 Summary of responses to questions about curable and incurable cancer

	Mean preparedness if cancer is curable, or localised	Mean preparedness if cancer is incurable or metastatic	t; p
Caring for patients with cancer	3.2	3.2	t=0.8; p=0.4
Recognising and diagnosing cancer	3.5	3.6	t=-6.6; p<0.01
Talking to patients	3.3	3.4	t=-2.1; p=0.03
Answering patients' questions	3.0	2.9	t=1.7; p=0.09

Preparedness is on a scale of 1-5

We asked the PRHOs if they agreed with the following statement: *'When the emphasis of care shifted from curative to palliative, I felt less certain of what was expected of me'.* The modal answer was 'disagree' (Figure 51). From this and the results in Table 29 we concluded that PRHOs felt poorly prepared for prescribing analgesia and writing up syringe drivers (see Figure 50 page 178), rather than being systematically underprepared for caring for patients with incurable cancer.

Figure 51 Respondents agreement with the statement *"When the emphasis of care shifted from curative to palliative, I felt less certain of what was expected of me"*



The x axis is on a scale of 1 to 5, where 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree

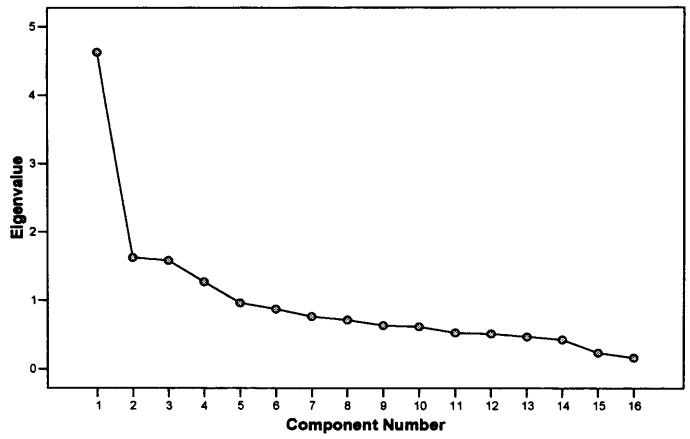
5.6.1.2 Patient centeredness

Only 3.7% of respondents disagreed with the statement *'patients who are being investigated for suspected cancer should be kept informed'* (76/2040; 95% CI 3.0-4.6%). Female respondents agreed slightly more strongly (mean score 2.1 vs 2.2/5; $t(2038)=3$; $p<0.01$), as did graduate entry students (mean score 2.0/5 vs 2.1/5; $t(2029)=-2.5$; $p=0.01$).

5.6.1.3 Factor analysis

The questionnaire asked 16 questions about different aspects of cancer care. I performed a factor analysis of these 16 questions, using a principal components extraction with a Varimax rotation [201] (see section 3.4.5 page 66 for full description of factor analysis). The scree plot* suggested there were either two or four factors present, while Kaiser's criterion suggested four. Both two and four factor solutions were reviewed: the four factor solution seemed to provided the most logical and comprehensive summary of the data.

Figure 52 Scree plot



* A scree plot can be used to provide a visual aid for deciding which factors (or components) are most important in explaining the variance. A scree plot shows the sorted eigenvalues, from large to small. It is called a scree plot because the larger eigenvalues (in this case 1-4) appear to represent a cliff, and the smaller ones (in this case 5 – 16) appear to represent the rubble or scree at the bottom of the cliff. The scree plot shown in Figure 52 is consistent with there being 4 factors.

The four factors together accounted for 56.8% of the variance in preparedness for aspects of cancer care. The factors were given the following names according to the questions that loaded onto them: 'communication'; 'chemotherapy and radiotherapy knowledge'; 'prescribing analgesia'; and 'recognising and diagnosing cancer' (Table 31).

PRHOs felt better prepared for 'recognising and diagnosing cancer' and 'communication' than for 'prescribing analgesia' or 'chemotherapy and radiotherapy knowledge' (Table 30) *.

Table 30 Mean preparedness of the respondents for four aspects of caring for patients with cancer

Factor	Mean (95% CI) preparedness (scale of 2-10)
Recognising and diagnosing cancer	7.1 (7.1-7.2)
Communication	6.9 (6.8-6.9)
Prescribing analgesia	5.4 (5.3-5.5)
Chemotherapy and radiotherapy knowledge	4.7 (4.7-4.8)

* The respondent's preparedness for each factor was the mean of their preparedness for all the aspects that loaded onto that factor. e.g. 'prescribing analgesia' was the mean of their preparedness for prescribing analgesia and for prescribing syringe drivers.

Table 31 Factor analysis

Aspects of patient care	Loadings*			
	'Communication'	'Chemotherapy and radiotherapy knowledge'	'Prescribing analgesia'	'Recognising and diagnosing'
Looking after patients with cancer	.48	.25	.38	.08
Treating oncological emergencies	.23	.31	.47	.03
Breaking bad news	**.66**	.06	.07	.05
Talking to patients about cancer	**.70**	.18	.13	.04
Talking to patients about investigations	**.70**	-.05	-.01	.11
Caring for patients with incurable cancer	**.62**	.07	.35	.06
Talking to patients with terminal cancer	**.75**	.05	.07	.00
Prescribing syringe drivers	.10	.03	**.78**	-.04
Prescribing analgesia	.07	.05	**.79**	.14
Having sufficient medical knowledge	.32	.33	.18	.21
Answering patient's questions	.49	.40	.07	.10
Radiotherapy knowledge	.07	**.91**	.09	.04
Chemotherapy knowledge	.11	**.91**	.09	.04
Recognising and diagnosing cancer	.11	.06	.02	**.93**
Recognising and diagnosing metastatic cancer	.13	.08	.09	**.91**
Answering patient's questions (incurable cancer)	.48	.22	.09	.15

*** Loadings are the correlations between the factors and the individual variables (i.e. in this case the PRHOs' preparedness for each aspect of cancer care). Only questions with loadings over 0.5 (shown in bold) were included in each factor.**

5.6.2 Oncology teaching, and preparedness for caring for patients with cancer

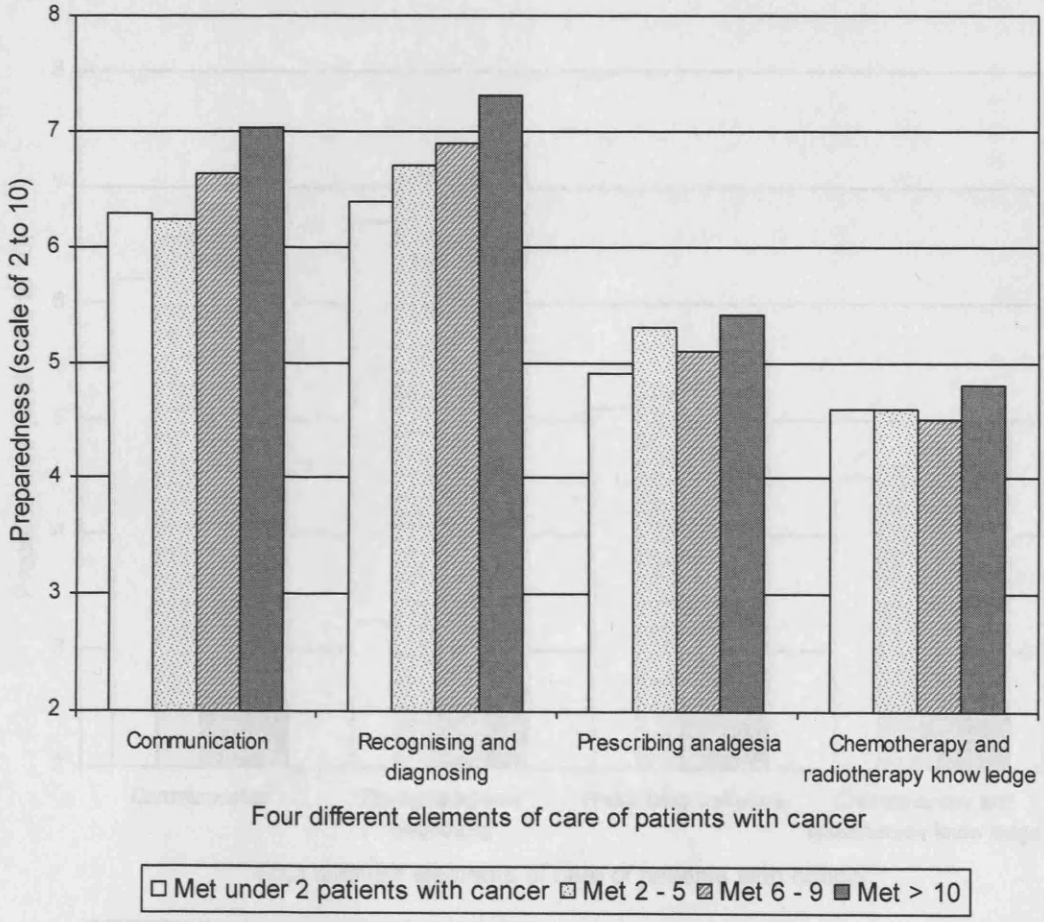
Oncology teaching was associated with improved preparedness: 44% of those who had done an oncology attachment felt prepared for looking after patients with cancer, compared with 34% of those who had not (χ^2=17.9; df=1; p<0.001). Respondents who had done an oncology attachment felt significantly more prepared for recognising and diagnosing cancer (7.2/10 vs 7.0/10; t[2010]=2.9; p<0.01), and felt they had significantly more knowledge about chemotherapy and radiotherapy (5.0/10 vs 4.4/10; t[2003]=8.3; p<0.001). They didn't feel more prepared for communication or prescribing analgesia (t[1928]=1.5; p=0.4 and t(1992)=-.06; p=0.2).

There were small but statistically significant correlations between the number of days spent in a hospice, and preparedness for the following aspects of cancer care: communication (r=0.16; p>0.001); recognising and diagnosing cancer (r=0.10; p<0.001); and prescribing analgesia (r=0.14; p<0.001).

The magnitude and direction of these correlations were unchanged if non-parametric methods were used.

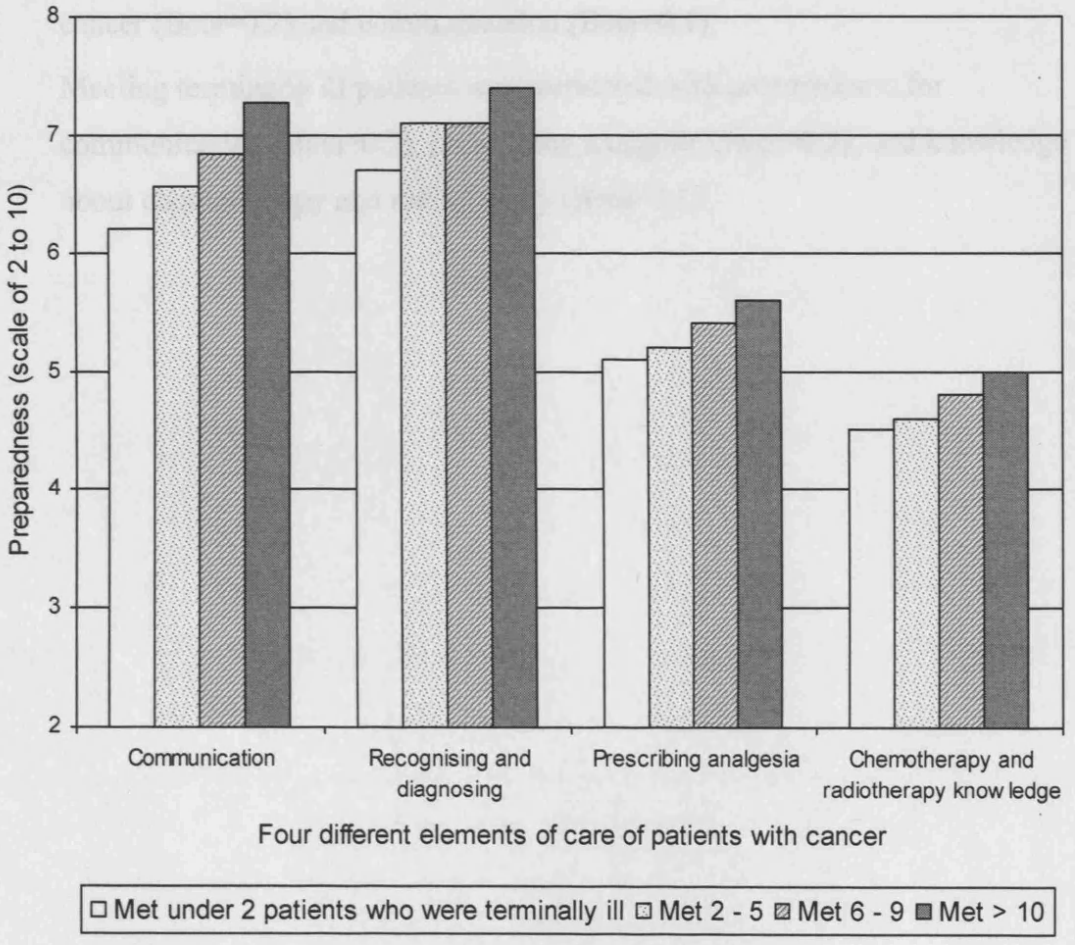
Respondents who had seen more patients with cancer at medical school felt more prepared for communication ($F=33.8$; $p<0.001$), recognising and diagnosing cancer ($F=16.5$; $p<0.001$), prescribing analgesia ($F3.8$; $p<0.001$) and knowledge about chemotherapy and radiotherapy ($F=3.4$; $p<0.05$) (Figure 53).

Figure 53 Improved preparedness related to meeting patients with cancer



There was a similar effect from seeing patients who were terminally ill with cancer: respondents who had met greater numbers of patients who were terminally ill felt more prepared for communication ($F=21.6$; $p<0.001$), recognising and diagnosing cancer ($F=7.4$; $p<0.001$), and prescribing analgesia ($F=14.0$; $p<0.001$) (Figure 54).

Figure 54 Improved preparedness related to meeting patients who were terminally ill



I performed a multiple regression to investigate the individual effect of each element of teaching upon preparedness, because there was collinearity between the elements of teaching (i.e. doing an oncology attachment correlated with seeing more patients – see Figure 36, page 154, section 5.4.1). The outcome variables were the four factors described above. For each outcome variable, I performed a multiple regression with four

predictor variables (oncology attachment, time in a hospice, meeting patients with cancer and meeting terminally ill patients) (see Table 32). The resulting model showed the following:

- Experience of an oncology attachment was correlated with preparedness for knowledge about chemotherapy and radiotherapy (Beta=0.6)
- Spending time in a hospice was correlated with preparedness for prescribing analgesia (Beta=0.2), communication (Beta=0.1), and diagnosing cancer (Beta=0.1).
- Meeting patients with cancer was correlated with preparedness for diagnosing cancer (Beta=0.2) and communication (Beta=0.1).
- Meeting terminally ill patients was correlated with preparedness for communication (Beta=0.3), prescribing analgesia (Beta=0.2), and knowledge about chemotherapy and radiotherapy (Beta=0.2).

Table 32 Multiple regressions showing the relationships between aspects of teaching and aspects of cancer care

Elements of teaching	Preparedness for different aspects of cancer care			
	Communication	Recognising and diagnosing	Prescribing analgesia	Chemotherapy and radiotherapy knowledge
Oncology attachment				Beta=0.6**
Length of time spent in a hospice	Beta =0.1**	Beta =0.1**	Beta =0.2**	
Number of patients with cancer seen	Beta =0.1*	Beta =0.2**		
Number of terminally ill patients seen	Beta =0.3**		Beta =0.2**	Beta =0.2**

*** = p < 0.05 ** = p < 0.001**

Empty cells – no significant contribution

I analysed variables such as the 'number of patients seen' as continuous variables. They could not be considered categorical, because students who saw 6-9 patients with cancer also saw 2-5 patients with cancer hence the categories are not separate. I had some concern however that these variables were positively skewed: most students saw >10 patients with cancer. The residuals were normally distributed, which was reassuring.

5.6.3 Multiple regression to predict preparedness for caring for patients with cancer

In section 5.5 I performed a multiple regression analysis to establish seven variables which could predict preparedness for starting work as a doctor. In this section so far I have been analysing the specific relationship between oncology teaching and preparedness for caring for patients with cancer. I now describe a combination of these two analyses: I have used multiple regression to investigate the relationship between oncology teaching and preparedness for cancer care, **taking into account** the seven variables which predicted preparedness for starting work as a doctor.

I performed a multiple regression, with cancer preparedness* as the outcome variable and the following variables as the predictor variables:

- From section 5.5
  - Teaching that was relevant to life as a doctor
  - Finding it easy to get help
  - Length of shadowing attachment
  - Course that had been redesigned in light of *Tomorrow's Doctors*
  - Feeling supported by the nursing staff
  - PBL course
  - Personal experience of ill health
  - Personality traits

* In this case, I used all four aspects of cancer care, added together, as the outcome variable. The results were not substantially different however if respondents' agreement to the single statement '*I felt prepared for looking after patients with cancer*' was used instead.

- From section 5.6 Doing an oncology attachment
  Visits to a hospice
  Meeting patients with cancer
  Meeting patients who are terminally ill

The variables were entered into the regression in chronological order, using the 'ENTER' command.

Table 33 shows the results of the multiple regression. The variables that were significantly correlated with preparedness for caring for patients with cancer (in order of Beta weights, which represent the standardised correlation coefficients) were:

- Relevant teaching (Beta = 0.26)
- Number of patients with cancer seen (Beta =0.12)
- Number of terminally ill patients seen (Beta =0.10)
- Number of days spent visiting a hospice (Beta =0.08)
- Being able to identify role models (Beta =0.08)
- Personality trait of neuroticism (Beta =-0.05)
- Doing an oncology attachment (Beta =0.05)

The following variables were not included in the model, because their inclusion did not significantly increase the percentage of variance explained: personal experience of ill health; PBL course; course had been redesigned in light of *Tomorrow's Doctors*; length of shadowing; finding it easy to get help; and feeling supported by the nursing staff.

Table 33 Multiple regression model of factors impacting on preparedness for cancer care.

Predictor variables	Scale upon which predictor was measured	B	Beta	t	p
(Constant)		2.6		9	<0.001
Agreeableness	3-15	-0.02	-0.03	-1.4	0.2
Conscientiousness	3-15	0.02	0.04	1.8	0.1
Extraversion	3-15	0.02	0.05	1.4	0.2
Neuroticism	3-15	-0.2	-0.05	-2.1	<0.05
Openness	3-15	0.001	0.002	-0.1	0.9
Doing an oncology attachment	No *vs* Yes	0.08	0.05	2.2	<0.05
Visiting a hospice	No *vs* <1 day *vs* 1-2 days *vs* 3-7 days	-0.06	-0.08	-3.6	<0.001
Meeting patients with cancer	<2 patients *vs* 2-5 *vs* 6-9 *vs* >10	-0.13	-0.12	-4.2	<0.001
Meeting patients with cancer who were terminally ill	<2 patients *vs* 2-5 *vs* 6-9 *vs* >10	-0.8	-0.1	-3.4	<0.001
Teaching which is relevant to real life as a doctor	Likert scale 1-5	0.25	0.26	11.2	<0.001
Role models	Likert scale 1-5	0.06	0.08	3.5	<0.001

The dependent variable was preparedness for caring for patients with cancer (on a scale of 1 to 5). B represents the increment in preparedness for every one-point increment of the predictor variables. Beta is the standardised correlation coefficient, which represents an estimate of what the correlation coefficients would be, if all predictor variables were measured on the same scale. All 5 elements of the personality scale were included in this table, even though not all are significant, because they are one scale and as such should be analysed together.

A total of 22% of the variance in preparedness for cancer care could be predicted on the basis of the variables shown in Table 33. Once these variables had been taken into account, adding 'medical school' to the regression explained only a further 3% of the variance (taking the total to 25% explained).

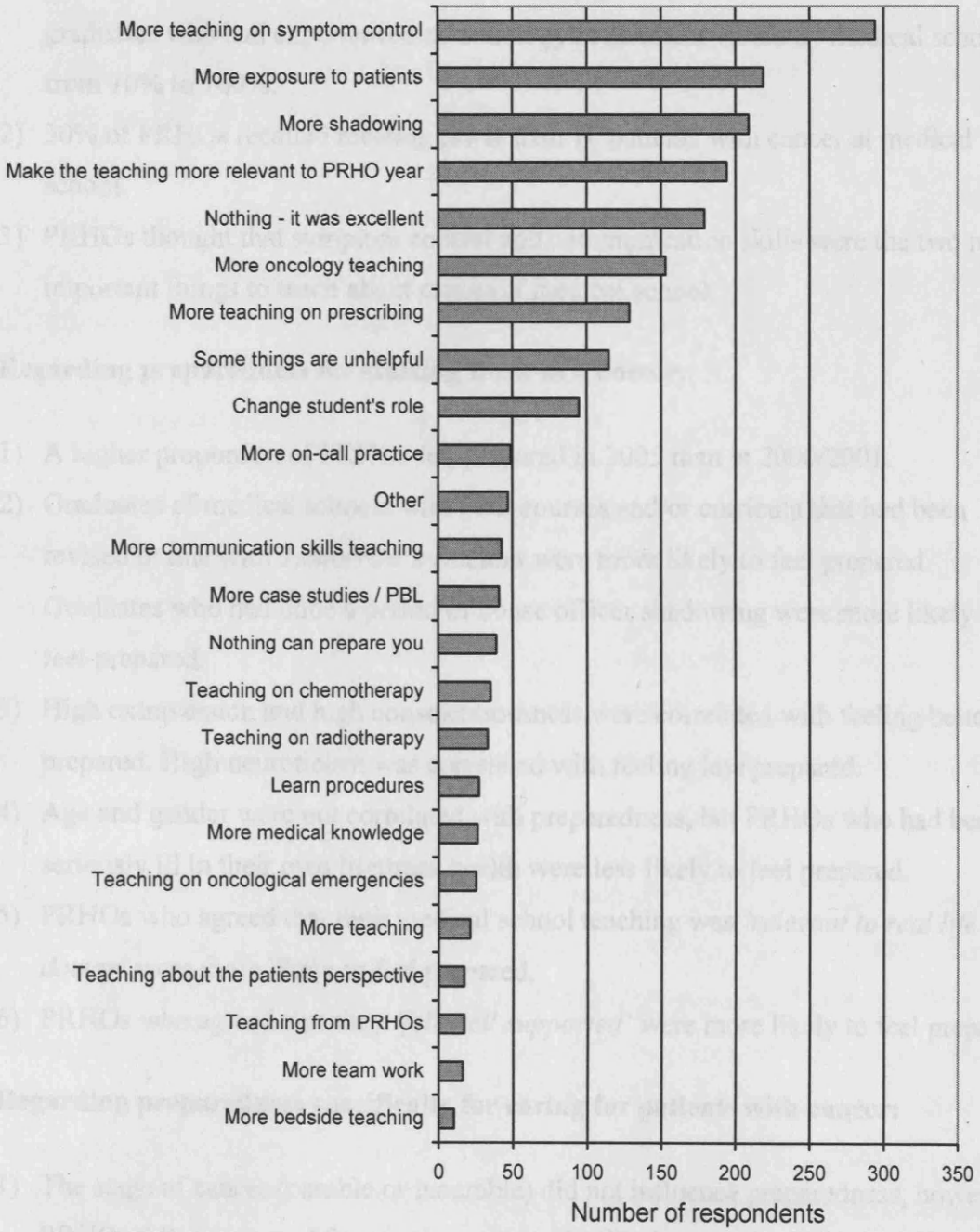
5.7 How PRHOs felt students could be better prepared

The questionnaire asked the PRHOs to respond to the following question: *'Are there any ways you would change the teaching at medical school to make doctors more prepared for their house jobs?'* The commonest answer was *'more palliative care/symptom control teaching'* (n=294), the second commonest answer was '*more exposure to patients'* (n=219), and the third commonest answer was '*more shadowing'* (n=209) (Figure 55 overleaf). 179 respondents said '*nothing could make us any better prepared*' (NB, these were free text responses, analysed according to the constant comparative method).

These 'n's are quite low compared to the previously reported free text responses because the answers were relatively evenly spread between a large number of suggestions, including *'make the teaching more relevant to the house officer year'* (n=194), *'more oncology teaching'* (n=153), *'more teaching on prescribing'* (n=129). 115 students used the free text response box to mention things which had been done at medical school which weren't helpful, for example *'oncology is poorly taught at medical school'*, or *'much less sociology... less changing of syllabus on a yearly basis – it is concerning when the deans do not know what is going on (*see Figure 55, *under 'some things are unhelpful').*

The PRHOs' views about what would prepare them better for starting work largely concur with the findings of the multiple regression.

Figure 55 Free text responses to the question *'Are there any ways you would change the teaching at medical school to make doctors more prepared for their house jobs?'*



5.8 Discussion

5.8.1 Summary of the main findings

Regarding oncology teaching

1) 38% of PRHOs had not experienced an oncology attachment. The number of graduates who had experienced an oncology attachment varied by medical school from 10% to 100%.
2) 30% of PRHOs recalled meeting fewer than 10 patients with cancer at medical school.
3) PRHOs thought that symptom control and communication skills were the two most important things to teach about cancer at medical school.

Regarding preparedness for starting work as a doctor:

1) A higher proportion of PRHOs felt prepared in 2005 than in 2000/2001.
2) Graduates of medical schools with PBL courses and/or curricula that had been revised in line with *Tomorrow's Doctors* were more likely to feel prepared. Graduates who had done a period of house officer shadowing were more likely to feel prepared.
3) High extraversion and high conscientiousness were correlated with feeling better prepared. High neuroticism was correlated with feeling less prepared.
4) Age and gender were not correlated with preparedness, but PRHOs who had been seriously ill in their own lifetimes health were less likely to feel prepared.
5) PRHOs who agreed that their medical school teaching was *'relevant to real life as a doctor'* were more likely to feel prepared.
6) PRHOs who agreed that they *'felt well supported'* were more likely to feel prepared.

Regarding preparedness specifically for caring for patients with cancer:

1) The stage of cancer (curable or incurable) did not influence preparedness, however PRHOs felt unprepared for certain aspects of palliative care in patients with incurable disease, particularly prescribing analgesia.
2) PRHOs felt relatively well prepared for recognising and diagnosing cancer and communicating with patients with cancer. PRHOs felt less well prepared for dealing

with oncological emergencies. PRHOs felt that their knowledge about chemotherapy and radiotherapy was inadequate.

3) PRHOs who had experienced an oncology attachment felt better prepared in terms of chemotherapy and radiotherapy knowledge.
4) There was a correlation between length of time spent in a hospice, and preparedness for prescribing analgesia and communication with patients with cancer.
5) There was a correlation between the number of patients the PRHOs recalled meeting at medical school, and their preparedness for recognising cancer, communication with patients with cancer, prescribing analgesia, and knowledge about chemotherapy and radiotherapy.
6) PRHOs believe students would be better prepared if they learnt more about symptom control and had more exposure to patients. This view concurred with the quantitative analysis of the questionnaire results.

5.8.2 Strengths and weaknesses of the study

This questionnaire generated data of sufficient quality and quantity to answer the intended research questions. We ensured our research would be contextual, by engaging the audience (in an interview study) prior to designing the questionnaire. The qualitative element of the design helped to ensure inclusion of a broad spectrum of variables thereby facilitating conclusive multiple regression analyses: the majority of the medical-school-related variance in preparedness could be explained by the variables measured in the questionnaire.

The qualitative element of the study design also increased our ability to interpret the data. For example, in the case of the data about chemotherapy and radiotherapy there was an apparent contradiction in the results: PRHOs felt unprepared in terms of chemotherapy and radiotherapy knowledge, and 75% said they would have preferred to more teaching on this topic, but when asked for the least important thing to learn about cancer the commonest answers were *'details of chemotherapy'* and *'details of radiotherapy'*. Analysis of the qualitative data suggested that PRHOs wanted to receive teaching about what they perceived as the relevant aspects of chemotherapy and radiotherapy at medical school, for example side effects and how to manage them,

rather than what they perceived as irrelevant, such as details of regimens, doses and radiotherapy schedules.

Below I discuss some of the limitations of my work and consider how they may inform future study design.

5.8.2.1 Response rate

The response rate for our questionnaire was 43%. Previous national surveys of newly qualified doctors have achieved response rates in excess of 60% by posting questionnaires to doctors home addresses [4;62;153;201], but changes in data protection meant that we could not mail to personal addresses [187]. Our figure of 43% compares favourably with other national studies of junior doctors that were performed without using the GMC register. For example Roddy *et al* (2004) achieved a 26.5% response rate by distributing questionnaires through the deaneries and the hospital postgraduate education centres [188]. The Royal College of Physicians (2006) achieved a 9.1% response rate from all junior doctors in the UK by electronically distributing the questionnaire to doctors registered with the British Medical Association, trainee representatives at the Association of Medical Research Charities (to be forwarded on), specialist registrars, and by posting the link on the Association of Surgeons in Training website [202].

The constraints of data protection have restricted the methods available for performing large-scale studies of junior doctors. These constraints, which appear to lower response rates, are of concern because they will limit the ability of researchers to study the effects of current changes in junior doctors training (section 3.2.3 page 55).

There have been recent small-scale (local or regional) surveys, which have achieved response rates similar to or higher than ours. These responses have been achieved in various ways. Derrick et al (2006) achieved a 40% response rate by posting a questionnaire to all 184 junior doctors at one hospital [203]. Wall et al (2006) achieved 55% by asking clinical tutors to distribute questionnaires to all PRHOs in one deanery [49]. The highest response rate in a similar study was 74%, which was achieved by selecting a small sample of PRHOs (n=70) and asking the questions over the phone [204]. If performing similar research again, I would aim for a smaller sample size, and stratify

by medical school, region, and size of hospital to ensure that the sample was representative. I would then try to make a personal contact with the postgraduate centre administrators or the PRHOs themselves.

5.8.2.2 Representiveness of the responders

The respondents to our survey were representative of the majority of medical schools, although Edinburgh graduates were under-represented because Edinburgh deanery did not participate in the study. Male participants were also under-represented, which is a common finding in questionnaire studies [205;206]. We did not find any significant gender differences in preparedness, although there may be differences in preparedness in non-responders. At the level of the medical schools, there was no correlation between response rate and preparedness, which was reassuring.

5.8.2.3 Patient-centeredness and relevant teaching

In the interview study, consultants said that PRHOs were not very patient-centred. In an attempt to quantify patient-centeredness in the questionnaire, we asked the PRHOs if they agreed with the statement '*Patients who are being investigated for suspected cancer should be kept informed about their possible diagnoses*'. The inclusion of a validated instrument for measuring patient centeredness may have strengthened the study, although these are long (18 items), and may have reduced the response rate [207].

In future work, it would be valuable to ask PRHOs further questions about 'relevant teaching'. We know that PRHOs value relevant teaching, but we do not know exactly what teaching they think is relevant. The free text answers to Question 16 did inform us to some extent. For example, when asked how medical school teaching could be changed to better prepare them, the PRHOs are quoted as saying *'teaching on what is/isn't expected of house officers'*, *'more time shadowing junior members of the team rather than just the consultant'*, *'less cell/molecular biology and more teaching on how to prescribe things; practical aspects'* and *'workshops on PRHO problems and solutions - run by current PRHOs'*. The interview data reported in Chapter 4 was also informative, suggesting that the key differences between being a student and being a doctor are continuity and responsibility (page 88).

5.8.2.4 Variance in preparedness

Using the variables measured in this study, we could explain 24% of the variance in preparedness for the PRHO year as a whole, and 22% of the variance in preparedness for cancer care. We do not believe that our questionnaire missed out significant medical-school related variables, because adding medical school into the regression model added very little to our ability to predict preparedness (4% for PRHO year as a whole, and 3% for caring for patients with cancer). The 76-78% of variance that remains unexplained may be due to characteristics of the PRHOs, or of their experiences at work. I included in the questionnaire a measure of personality trait, but not of anxiety, depression, or burnout, in order to achieve a succinct questionnaire and thereby maintain high compliance. I chose personality because evidence has indicated that personality predicts doctors response to their workplace environment including stress and burnout [62]. Another feature of personality as a variable which I perceived as an advantage was its stability over time [62]. The decision not to measure more fluctuating variables, such as stress, burnout, and satisfaction with medicine, may have limited my ability to explain more fully the variance in preparedness.

In Chapter 1, I discussed the psychological construct known as self-efficacy, which is defined as an individual's belief about their ability to control the world around them, including their ability to perform certain tasks. Mavis *et al* (2001) measured both self-efficacy and preparedness in students who were about to sit an objective structured clinical examination [208]. Self-efficacy and preparedness were found to be correlated, with a Beta weight of 0.31 (which is relatively high), and the authors suggest that self-efficacy predicts preparedness. If this is true, it has consequences for our study. It is recognised that self-efficacy is highly context dependent, and cannot be measured in an abstract way [52]. This may mean that it is not possible to measure preparedness in the abstract either, because it is predicted by self-efficacy, which is a context-specific variable. For example, a PRHO might feel prepared to care for a patient with breast cancer, but not a patient with leukaemia. They might feel prepared to copy a repeat script for a syringe driver, but not to escalate the opiate dose. They may feel prepared for communicating with patients with cancer, unless the patients are angry and upset. And so on...

If preparedness is partially predicted by self-efficacy, and self-efficacy is highly context specific, this would explain the fact that our questionnaire only managed to predict a quarter of the variability in preparedness. It would further suggest we have predicted the 'parts' of preparedness which are most important to educationalists, i.e. those which relate to training.

5.8.2.5 The power of the questionnaire

It should be noted that some of the relationships between aspects of undergraduate teaching and aspects of preparedness are small, while still being statistically significant (possibly through having a large sample). The validity of our conclusions is supported by the consistency between the quantitative results and the qualitative results. Furthermore, medical teaching involves large numbers of students, and so although differences at the level of the individual student may be small, they will still impact at a population level (meaning the population of students).

5.8.3 Comparisons with previous research

5.8.3.1 The interview study

The questionnaire confirmed the findings of the previously performed interview study as follows: preparedness was improved by teaching which was relevant to real life as a doctor, feeling well supported at work, doing an oncology or palliative care attachment, meeting patients with cancer, and having had a relative or friend who had had cancer. Certain interview study findings were not confirmed by the questionnaire however. The questionnaire did not demonstrate a correlation between maturity and preparedness, as had been suggested by the consultant interviewees. This may have been because graduate entry status, which we used as a surrogate for age, was not sufficiently representative of maturity.

The questionnaire data helped to further explain the findings of the previously performed interview study as follows. Our interpretation of the interview data was that PRHOs felt more prepared for looking after patients with 'curable cancer'. The questionnaire included several questions aimed at clarifying this. The questionnaire responses showed that whilst the PRHOs felt well prepared for some aspects of

palliative care such as communication, they felt less well prepared for prescribing analgesia. The PRHOs thought (possibly as a result of their lack of preparedness) that it was important for medical students to learn about symptom control.

5.8.3.2 Previous surveys and consensus statements about oncology teaching

In contrast to the previous studies about oncology teaching (described in section 1.2.3.1, page 30), this study has shown that students value their oncology teaching, and has provided evidence of good practice, for example in the teaching of recognising and diagnosing cancer and of communication skills. We have also identified areas for improvement, for example the exposure of students to oncology. Previous authors have also identified exposure to oncology as a problem area[77].

The WHO/UICC consensus statement from 1992, described in Chapter 1, recommended that all medical students undergo at least 2 weeks of specific oncology teaching. Our study however has shown that 38% of UK medical students do not currently have this opportunity. Two approaches could be taken to this finding: to use the statistic to campaign for wider availability of oncology attachments, or to focus on the areas of good practice and areas for improvement identified within the data collected for this study. My preference would be for the second, since it represents a more flexible approach to harnessing oncologists' enthusiasm for teaching. Although the 1992 statement was based upon consensus, which is a strength, it was not based on any identifiable research evidence. We now have evidence (albeit solely based upon the views of recently qualified doctors) that it is primarily patient exposure, rather than an oncology attachment *per se*, that helps prepare students for caring for patients with cancer.

5.8.3.3 Previous surveys about palliative care teaching

This study has found inadequacies in undergraduate palliative care teaching. This is not a new or controversial finding: previous studies with the same conclusions have been reviewed in *The Journal of the American Medical Association (1997)* [209;210]. A telephone survey of the deans of 62 randomly selected US medical schools found that 67% reported that insufficient time is given to palliative care in their curriculum. 100% of the deans endorsed integrating end-of-life teaching into existing courses or clerkships

[211]. Dissemination of the data presented in this thesis may help to bring about future improvements.

5.8.3.4 The 2000/2001 survey about preparedness.

Our results show that preparedness has improved significantly over 5 years, and detailed comparison of our results with previous studies suggested that changes in medical school courses were partly responsible for these improvements. This concurs with recently published qualitative evidence that a reformed medical curriculum can take away some of the anxieties associated with graduation [212].

There was a greater impact of course changes between 1999-2002 than between 2002-2004 upon preparedness, and schools that changed their courses later appeared to have experienced less benefit (see Table 24 page 166). There are a number of possible reasons for this. Schools which undertook changes relatively late may have taken measures to improve preparedness prior to their full-scale course change, for example by making teaching more relevant to the PRHO year. Increased preparedness may also have been due to coincidental improvements in junior doctors' working conditions: good practice guidelines regarding junior doctors' supervision and hours of work became legally binding in the UK in 2001 [213].

5.8.3.5 Previous studies about improving preparedness

Previous cohort studies have demonstrated improvements in preparedness due to graduate entry courses, problem based learning (PBL) courses, and periods of house officer shadowing. We have shown that experience of shadowing and PBL courses had only low correlations with preparedness compared to other variables we measured, and that graduate entry status had no correlation. It is possible that the effect of PBL is mediated through another variable, for example relevant teaching. It is also possible that previous studies were detecting an increase in confidence or self-efficacy in the first cohort of students undergoing 'new' courses.

5.9 Conclusions

Oncology training is helpful in preparing students for being PRHOs, but we have identified the following problems: newly qualified doctors' preparedness is poor for dealing with oncological emergencies, prescribing analgesia, and for knowledge about chemotherapy and radiotherapy; there are worryingly low levels of exposure to patients with cancer.

If students are to learn about cancer, it is essential for them to meet patients with cancer at medical school. Preparedness for caring for patients with cancer is enhanced by relevant teaching and by meeting patients with cancer. We need to find a way of using this data within this thesis to harness the enthusiasm oncology specialists have for teaching, and ultimately to improve patient care.

Chapter 6. How to use the evidence from Chapters 4 & 5 to improve undergraduate oncology teaching: A Delphi consultation

'I am accustomed to think very long of going anywhere,—am slow to move. I hope to hear a response of the oracle first.'

Henry David Thoreau, The Writings of Henry David Thoreau, 1906

Summary

18 stakeholders reviewed the results of this thesis, and a modified Delphi technique was performed to establish a consensus view. The consensus was as follows: students need more exposure to patients with cancer; oncology teaching should focus on symptom control; there should be greater community involvement in oncology teaching; we need to define the core cancer-related competencies for foundation year doctors.

6.1 Introduction

My aim in undertaking this research was to facilitate improvements in patient care through improvements in undergraduate oncology training. Research findings need to be in the public domain in order to change teaching practice, so I needed to ensure that the findings of this thesis were disseminated to the oncology community, oncology teachers, and medical educationalists. I also needed to establish the priorities for future research and changes in teaching practice.

Cancer Research UK (CRUK) funded a national study about postgraduate oncology training in 2000-2003 [64]. After their study was completed, CRUK organised a conference attended by around 100 people to disseminate the findings and to discuss the implications of the research. I adopted a similar strategy on a smaller scale, and consulted a group of stakeholders about my results and how they should be prioritised. I used a formal consultation process called the Delphi technique [214;215], which involved the stakeholders in a face-to-face meeting and two questionnaires. The Delphi technique is a well-recognised and commonly described method for reaching a consensus. The technique has been used to design medical school curricula [216;217], list appropriate duties for PRHOs [218], and identify research priorities [219-221]. Important advantages of the Delphi technique over unstructured group discussion are that all members participate in the decision making, the consultation process is not dominated by forceful members, and (if well facilitated) definitive conclusions can be reached [214].

My objectives in performing the Delphi technique were twofold. Firstly to disseminate the results of my research to a group of interested stakeholders. Secondly, to reach a consensus about how the results should be acted upon.

6.2 Methods

The Delphi technique is an iterative process whereby a group of people crystallise their opinions and then reach a consensus (Figure 56). In this methods section I explain the process in detail. NB Although the majority of the methods used in this thesis were described in Chapter 3, the methods for the Delphi are described separately here because they related to a different group of participants.

Figure 56 The Delphi technique.

Summary	Overview of a Delphi, as described by Elwyn et al [214]	The specific Delphi technique described in this chapter
1. Convene an expert group	The organisers choose a group of experts who represent the stakeholders in the decision making process.	We invited 27 experts to participate in a consultation process. 19 accepted (70%).
2. Produce a list of statements	A list of statements is generated. Previously published documents can be modified or adapted. Alternatively, the expert group can generate the list.	18 experts attended a meeting. We summarised the opinions expressed at the meeting to generate a list of statements.
3. Round 1 of the questionnaire	The list of statements is circulated to the group of experts, who rate them, usually on a 10 point scale from 'strongly agree' to 'strongly disagree'.	We circulated the list of statements to the 18 experts for them to rate.
4. Produce a rated list of statements	The organisers produce a document that describes how the expert group responded to the Round 1 questionnaire. Usually the median and interquartile ratings are used to describe the responses.	12 experts rated the list of opinions (67%), and we summarised the ratings using the median and inter-quartile ranges.
5. Round 2 of the questionnaire	The document produced in Step 4 is circulated to the expert group, who re-rate the statements. Members may choose to modify their ratings based upon the responses of the rest of the group.	We circulated the document generated in Step 4, asking the experts to state their agreement or disagreement, in light of the previous ratings and comments
6. Repeat steps 4 & 5 as necessary	Steps 4 and 5 are repeated until a consensus is achieved. There is no clear guidance on the requirements for a consensus.	15 experts responded to round 2 (83%). Opinions with over 75% agreement were deemed to have achieved consensus agreement.
7. Produce a consensus statement	A consensus statement is circulated to the expert group for their approval.	We circulated the consensus statement asking for comments, and received only two, both supportive.

6.2.1 Convene an expert group (step 1)

27 people received invitations to be in our expert group: 8 oncologists, 7 educationalists, 2 surgeons, 4 palliative care physicians, 2 representatives of patient advocacy groups, 2 oncology nurses, and 2 junior doctors. The invitees were all actively involved in teaching about cancer and/or curriculum design, or if not (for example in the case of patient representatives) had expressed an interest in teaching. Six of the people invited had published papers in relevant areas.

The invitees were primarily selected on the basis of having relevant interests and experience of oncology teaching. However several had also personally expressed an interest in the results to one of us (Jane Dacre, Alison Jones or myself), and one was recruited by the personal recommendation of another invitee.

We wrote individually to each invitee, explaining the purpose of setting up the group, and the reasons for the invitation in each case. We explained that acceptance would initially involve a 2.5 hour meeting in central London, for which refreshments and travel expenses would be provided. We sent one reminder to non-responders.

6.2.2 Produce a list of statements (step 2)

I organised a face-to-face meeting of the expert group (see Figure 57 overleaf for timetable). The aim was to allow all the experts to see the results of Chapters 4 and 5, to allow them the opportunity to ask for points of clarification, to stimulate group a discussion about the results, and to generate ideas for future projects or interventions.

Figure 57 Timetable of the meeting

6.00-6.45	Presentation of research findings
6.45-7.45	Working dinner in 4 small groups. Each group was asked to prepare a 5 minute presentation in response to the following questions: 1. What is the most important finding of this study? 2. What action should be taken next? a) How should the results be disseminated? b) Should there be an intervention study, and if so what?
7.45-8.05	5 minute presentation from each group
8.05-8.30	Open discussion of the presentations
8.30	Close

The majority of the discussion time was in a small group setting in order to encourage participation. All members of the expert group wore badges during meeting stating their names but not their job descriptions or titles, to reduce the risk of junior members of the expert panel feeling intimidated.

The meeting was recorded as follows: the presentations and the group discussion were videoed, Kath Woolf and I took notes throughout, and I preserved the acetates that were used for the presentations. After the meeting, I used these materials to produce a list of the key opinions that had arisen and statements that were made during the presentations and/or the group discussion.

6.2.3 Perform postal questionnaires to achieve a consensus (steps 3-7)

The opinions expressed at the meeting fell into two categories: statements about the most important findings of the study; and statements about interventions that should be pursued

I circulated the list of statements to the 18 members of the expert group, asking them to rate their agreement with each on a scale of 1 (disagree completely) to 10 (agree completely).

I then re-circulated the list of statements as a second questionnaire, showing the group the results of the first questionnaire and summarising any free text comments (both questionnaires are attached at the back of the thesis). The second questionnaire asked the group members to reconsider their opinion based upon the views of the entire group, and then to state whether they agreed or disagreed with each statement, or if neither, to give a comment.

Statements with which 75% of respondents agreed in the second round became consensus statements. I chose 75% agreement as the cut-off for a consensus because previous authors have used this level successfully [222]. Statements with 60-75% agreement were considered borderline, and statements with less than 60% agreement were rejected as not having reached consensus agreement.

It can be seen from Figure 56 that our consultation process different slightly from a standard Delphi technique: in the second round of the questionnaire, experts were asked to agree or disagree with opinions (not to rate them from 1 to 10). The reason for this deviation was that published Delphi studies that used 1-10 ratings have failed to reach a consensus [223]. Conversely, Delphis which used the 'agree/disagree' method have successfully achieved a consensus [216].

6.3 Results of the Delphi

6.3.1 The expert group

19 experts accepted our invitation to attend a meeting, and 18 of these attended (67% overall response rate). All major stakeholder groups were represented: The attendees

were 5 oncologists, 3 educationalists, 2 surgeons, 4 palliative care physicians, 2 representatives of patient advocacy groups, and 2 junior doctors. The nurse consultant sent apologies at short notice, but the representative of Cancer Backup (a patient advocacy group) was also an oncology nurse and was able to represent the nurses' viewpoint.

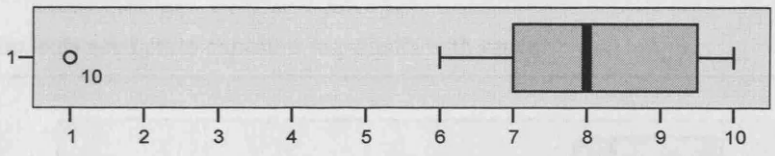
6.3.2 The most important findings

6.3.2.1 Meeting patients, symptom control, and communication skills

The Delphi process generated four consensus statements about the most important findings of the research so far:

- The response rate was high, which indicates that PRHOs think this is an important area (100% agreement - Table 34)
- Students need to be encouraged to see communication skills as applicable throughout their working lives, and not to put them 'in a box' (100% agreement - Table 35)
- There should be more teaching on symptom control (94% agreement – Table 36)
- Students need more exposure to patients with cancer (88% agreement – Table 37)

Table 34 Results of Delphi (1)

Statement	The response rate was high, which indicates that PRHOs think this is an important area
Rating in round one*	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	100% agreement

*** Respondent number 10 was an outliner in round 1, but revised their opinion in round 2**

Table 35 Results of Delphi (2)

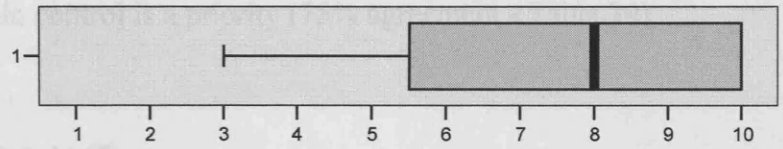
Statement	Students need to be encouraged to see communication skills as applicable throughout their working lives, and not to put them 'in a box'.
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	100% agreement

Table 36 Results of Delphi (3)

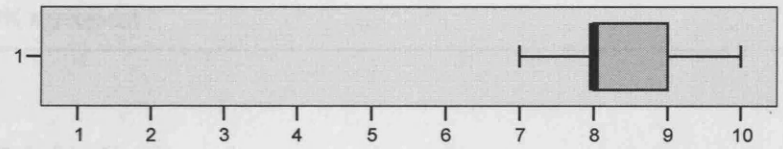
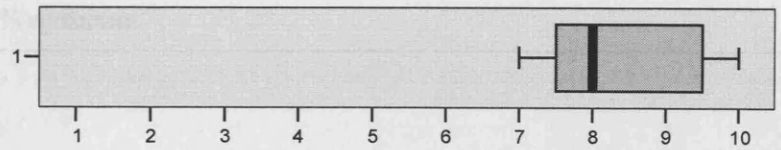
Statement	There should be more teaching on symptom control
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	94% agreement

Table 37 Results of Delphi (4)

Statement	Students need more exposure to patients with cancer
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	88% agreement

6.3.2.2 Pain control and improved preparedness

Two of the statements about the research findings were controversial (60-75% agreement):

- Preparedness has improved (75% agreement - Table 38)
- Teaching about pain control is a priority (75% agreement - Table 39)

Table 38 Results of Delphi (5)

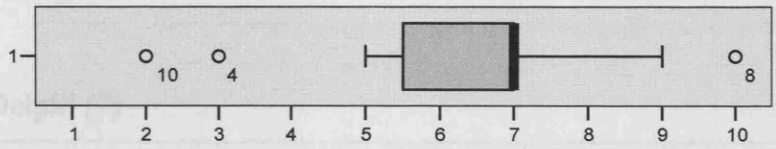
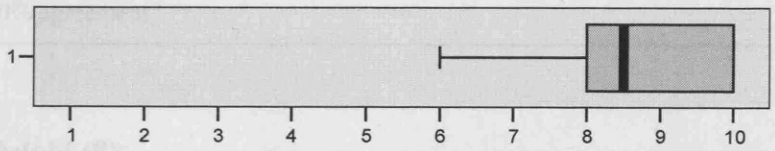
Statement	Preparedness has improved
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	75% agreement

Table 39 Results of Delphi (6)

Statement	Teaching about pain control is a priority
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	75% agreement

6.3.3 What should be done next

6.3.3.1 The focus for future research

In round two there was 100% agreement that the core cancer-related competencies for foundation year doctors needed to be defined (Table 40). Some of the experts expressed the view during round one that a core curriculum was an over-simplistic approach to the problem, however in round two 100% of the group agreed there should be a core curriculum. There was also a consensus that the questionnaire be repeated in 2 or 3 years time (possibly after recommended changes had taken place) (81% agreement - Table 41).

Table 40 Results of Delphi (7)

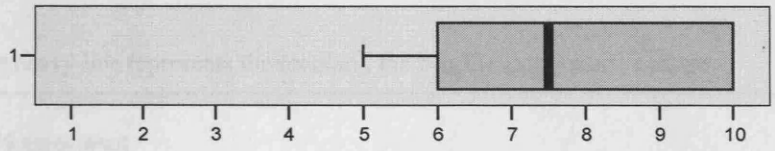
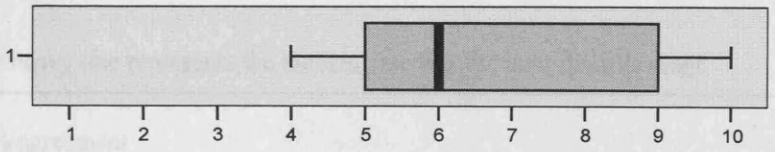
Statement	Define the core cancer related competencies for foundation year 1 doctors / thrash out a cancer curriculum
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	100% agreement

Table 41 Results of Delphi (8)

Statement	Repeat the questionnaire in 3 years time
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	81% agreement

6.3.3.2 Community involvement in oncology teaching

The group agreed that community and isolated teaching sites should be recruited, to help students to meet more patients with cancer (Table 42 and Table 43). This suggestion arose because one of the experts had recently moved to a hospice that was a long way from the nearest medical school. The group also recognised that most patients with cancer are not in hospital.

Table 42 Results of Delphi (9)

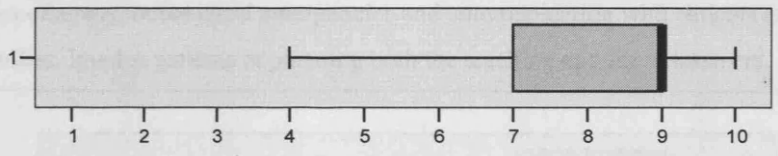
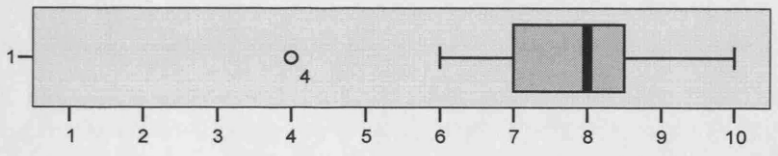
Statement	Recruit teaching sites that are isolated from medical schools, e.g. hospices
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	94% agreement

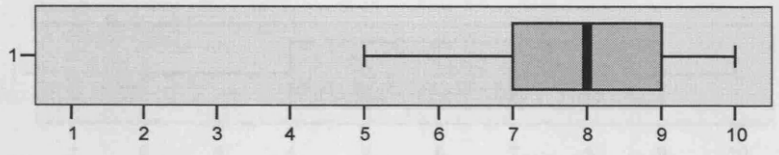
Table 43 Results of Delphi (10)

Statement	Encourage students to visit community care settings
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	88% agreement

6.3.3.3 Pilot study (controversial)

The suggestion that a pilot study should be carried out, where the teaching was based upon the needs identified in Chapters 4 and 5 and where patients were involved in the design of teaching, was controversial (69% agreement - Table 44). Two of the experts commented that they were concerned about involving patients in curricular design. This may have accounted for some of the controversy.

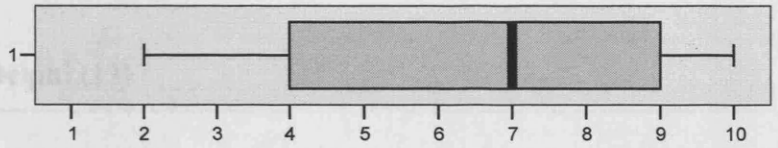
Table 44 Results of Delphi (11)

Statement	Do a pilot study looking at teaching symptom control, principles of radio and chemotherapy, oncological emergencies and communication with patients and families. Involve patients in planning both the teaching and the assessment.
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	69% agreement

6.3.3.4 Vertical cancer spine (controversial)

The suggestion that 'the patient with cancer' should form a vertical spine within the medical school curriculum was controversial and generated many written comments (69% agreement - Table 45). The reason for this suggestion was that students see most patients with cancer on medical and surgical firms, not on oncology. The objections were either (from the educationalists) that all specialties want their subject to be a vertical spine but oncology is no different, or (from the oncologists) that cancer teaching should not be handed over to non-specialists.

Table 45 Results of Delphi (12)

Statement	Teach oncology throughout medical school, not as a separate attachment.
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	69% agreement

6.3.3.5 Randomised controlled trials (rejected)

Three of the groups' suggested ideas for future research were for randomised controlled trials (RCTs). In order to clarify whether the group felt that RCTs were a good research method in medical education, I also included a 12th statement in the Delphi consultation process, which was *'Do a large scale randomised study comparing two methods of teaching oncology'*. As can be seen from Table 46 - Table 49, the consensus was against RCTs in general, and also against all 3 specific ideas for RCTs. The statements were as follows:

- Do a randomised controlled trial comparing teaching at a hospice with teaching at a hospital (50% agreement - Table 46)
- Do a randomised controlled trial. In the intervention arm, the teaching is focussed on the clerking of 5 typical or important oncology cases (31% agreement - Table 47)
- Do a large scale randomised study comparing two methods of teaching oncology (19% agreement - Table 48)
- Do a randomised controlled trial. In the intervention arm, involve patients and carers in planning the curriculum and the assessment (19% agreement - Table 49)

The objections to these statements (as indicated by the comments on the questionnaires) fell into two categories. Some experts were concerned about the practicalities, for example writing *'OK in principle, jolly difficult though'*. Some experts said specifically that students needed the teaching that was in both arms of the proposed study, for example teaching in a hospice and in a hospital.

Table 46 Results of Delphi (13)

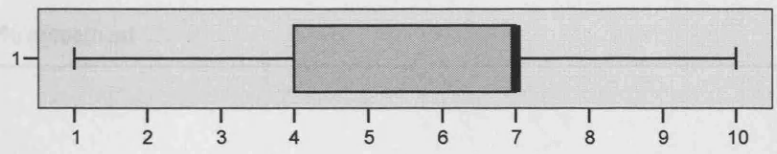
Statement	Do a randomised controlled trial comparing teaching at a hospice with teaching at a hospital.
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	50% agreement

Table 47 Results of Delphi (14)

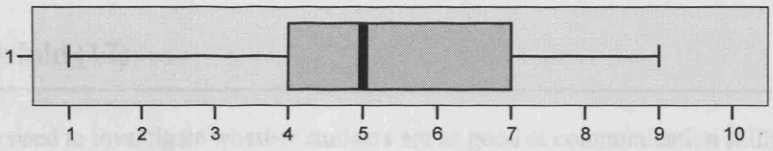
Statement	Do a randomised controlled trial. In the intervention arm, the teaching is focussed on the clerking of 5 typical or important oncology cases.
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	31% agreement

Table 48 Results of Delphi (15)

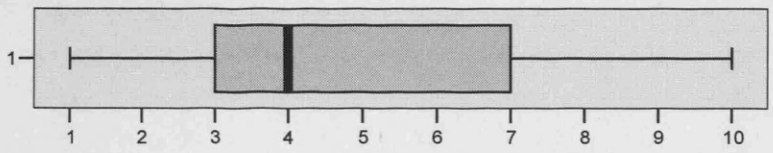
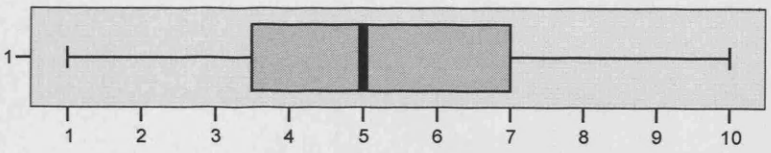
Statement	Do a large scale randomised study comparing two methods of teaching oncology
Rating in round one	
Rating in round two	19% agreement

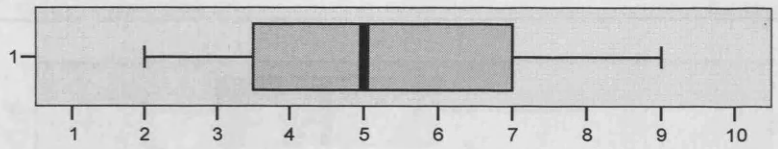
Table 49 Results of Delphi (16)

Statement	Do a randomised controlled trial. In the intervention arm, involve patients and carers in planning the curriculum and the assessment.
Rating in round one	
Rating in round two	19% agreement

6.3.3.6 Future research on communication skills (rejected)

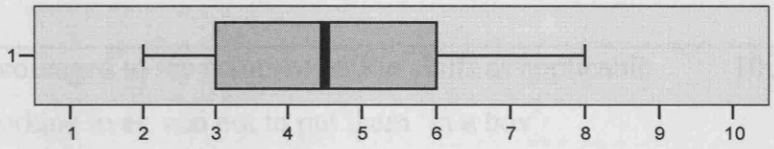
The suggestion that future research should focus on communication skills was rejected by the group. The comments were that such a study would be impractical, and that communication skills were already over-researched (44% agreement - Table 50).

Table 50 Results of Delphi (17)

Statement	We need to investigate whether students are as good at communication skills as they think they are
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	44% agreement

One suggestion was to implement an intervention that aimed to help students learn from their own (and each other's) personal experiences as friends or relatives of people with cancer. This suggestion was rejected, and the groups' main concerns were that this type of teaching would 'open up a can of worms' and was impractical from a student welfare point of view (25% agreed -Table 51).

Table 51 Results of Delphi (18)

Statement	Do an intervention which focuses on students' personal experiences of cancer or ill health
Rating in round one	 The heavy line represents the median , the box the inter-quartile range
Rating in round two	25% agreement

6.3.4 Summary of the group consensus views

The finding of the Delphi procedure are summarised in the following three tables.

Table 52 Summary of the Delphi consensus statements

The following statements achieved >75% agreement and hence were consensus statements:	Agreement
Students need to be encouraged to see communication skills as applicable throughout their working lives, and not to put them 'in a box'	100%
The response rate was high, which indicates that PRHOs think this is an important area	100%
Define the core cancer related competencies for foundation year 1 doctors / thrash out a cancer curriculum	100%
There should be more teaching on symptom control	94%
Recruit teaching sites that are isolated from medical schools, e.g. hospices	94%
Students need more exposure to patients with cancer	88%
Encourage students to visit community care settings	88%
Repeat the questionnaire in 3 years time	81%

Table 53 Summary of the Delphi controversial statements

The following statements were controversial, achieving only 60-75% agreement:

Preparedness has improved	75%
Teaching about pain control is a priority	75%
Do a pilot study looking at teaching symptom control, principles of radio and chemotherapy, oncological emergencies and communication with patients and families. Involve patients in planning both the teaching and the assessment.	69%
Teach oncology throughout medical school, not as a separate attachment	69%

Table 54 Summary of the Delphi rejected statements

The following statements were rejected because <60% of the group agreed with them:

Do a randomised controlled trial comparing teaching at a hospice with teaching at a hospital	50%
We need to investigate whether students are as good at communication skills as they think they are	44%
Do a randomised controlled trial. In the intervention arm, the teaching is focussed on the clerking of 5 typical or important oncology cases.	31%
Do an intervention which focuses on students' personal experiences of cancer or ill health	25%
Do a large scale study comparing two methods of teaching oncology	19%
Do a randomised controlled trial. In the intervention arm, involve patients and carers in planning the curriculum and the assessment.	19%

6.4 Further dissemination of the results

The Delphi meeting served as a useful stepping stone to wider dissemination of my results. As a result of the meeting I was able to have input into the design of three new undergraduate oncology courses via the following:

- Membership of the RFUCMS undergraduate oncology teaching committee
- Presentation to the Brighton and Sussex Medical School oncology and palliative care consultants
- Presentation to the Queen Mary medical school Year 5 committee.

At the time of writing, none of these courses has been fully implemented so feedback on the usefulness of this input is not yet available.

During the meeting, the experts made a number of recommendations about how/where to disseminate the results further. Their recommendations, and the action which has been taken in response, are shown in Table 55 overleaf.

In the ethics application for this study I made the following statement: *'Results will not be published in such a way that individual ... medical schools ... can be identified'*. As shown in Table 55 however, the feeling at the Delphi meeting was that individual medical schools should be allowed to know their own results, to help them to respond appropriately. We wrote to the chair of the ethics committee for guidance on this problem. He replied that although it would be breaching confidence to name the medical school in any published results, we could tell each medical school their own position in the ranking, if they asked, without breaching the terms of the protocol. We therefore wrote to the Dean of every medical school, and to the postgraduate deans with responsibility for the PRHO year, sending them a short report on the study and offering to tell them where their own medical school was in the ranking. So far, 10 medical schools and one postgraduate dean have responded.

Table 55 Recommendations and actions taken to disseminate the results

Recommendation of the meeting	Action taken
Send to results to the medical school and postgraduate deans	We wrote to 60 deans and foundation directors, enclosing a short report on our findings
Present the results at the Association for the Study of Medical Education (ASME) annual meeting, and to the European Association for Cancer Education (EACE)	I presented the qualitative results at ASME in June 2005, and the quantitative results at ASME and EACE in 2007
'Publish or be damned!' [quote from a member of the expert group]	Publications have been accepted by BMC Medical Education and the British Journal of Cancer
Go and see the GMC education committee	None yet
Make an application to CRUK for funding for future research into undergraduate teaching	I plan to attempt to obtain further funding to continue this research either through CRUK, or through the Modernising Medical Careers funding for academic training for junior doctors
'The association of palliative medicine is an untapped resource' [quote from a member of the expert group]	I am attempting to find palliative care colleagues who might be interested in collaborating in an application to the association

6.5 Discussion

6.5.1 Summary of the outcomes

18 stakeholders have reviewed the results of this thesis, and have agreed that the key findings are that students need more exposure to patients with cancer, and that undergraduate oncology teaching should focus on symptom control. They also said that there should be greater community involvement in oncology teaching, and that a future goal should be to define the core cancer-related competencies for foundation year doctors. The suggestion that a cancer curriculum should be developed was controversial when raised in the meeting, but via the Delphi process it gained consensus approval.

After performing the Delphi process I disseminated the results of this thesis by presentations, publications, posters, and personal communications with undergraduate and postgraduate deans, emphasising that students need more exposure to patients with cancer, and that oncology teaching should focus on symptom control.

When I started this thesis, I envisaged that the end product would be an innovative method of teaching oncology, which in the future could be tested against a standard method of teaching oncology, with the resulting (probably randomised) trial contributing to the evidence base upon which to build improvements in teaching practice. In healthcare research the randomised controlled trial (RCT) is universally acknowledged as the gold standard method for determining the efficacy of an intervention [224]. I have learnt however that this scientific model is not always appropriate. The reaction of the Delphi group to the suggestion of performing an RCT was lukewarm, and the group consensus was to attempt to change practice based upon the findings of the questionnaire, not to plan further comparison studies.

6.5.2 Strengths and weakness of using the Delphi technique

Performing this Delphi technique has given me the opportunity to get involved in the planning of oncology curricula, and to discuss my results with a group of experienced oncology and non-oncology educators. Reassuringly, the group's perspective on the

results was similar to my own – they felt that exposure to patients and teaching on symptom control were priorities.

Discussion during the Delphi technique served to clarify some of our research findings, for example, concerning communication skills. The group's suggestion that students compartmentalise communication skills, failing to see their relevance to everyday doctoring, both helps to explain the results and provides useful guidance for teachers of communication skills.

The Delphi technique was successful for prioritising research findings, and for kick-starting the dissemination of our results. However the Delphi involved a limited number of participants, and the results of the studies presented in this thesis need further dissemination. Further presentations at conferences and future publications as outlined in Table 55 (page 224) are necessary.

When considering the results of any consensus process such as a Delphi technique it must be remembered that the consensus represents, by definition, the areas of least controversy. This Delphi group was composed of a small number of experts, many of whom knew each other. The results must be interpreted with this in mind.

6.5.3 Comparison with previous consensus statements

Cancer curricula have been the subject of many previous publications. The UICC/WHO have published a series of undergraduate cancer curricular from around the world. The Australian Cancer Society has published an 'Ideal Cancer Curriculum', the authors of which, in a personal view in Lancet Oncology in 2006, stated that all undergraduate oncology teaching should be based upon a nationally agreed standard curriculum [78]. Oncology education in Europe was discussed at the 2006 ESMO congress, and a disparity in educational provision between countries was noted. In response, a call was made for an internationally agreed cancer curriculum [225].

The Australian Cancer Society 'Ideal Cancer Curriculum' has proved successful, with reported improvements in undergraduate teaching [75;226]. The authors propose that their curriculum was successful because it was a consensus document. We can learn useful lessons from the Australian experience. Increased community involvement in oncology teaching is inevitable to a certain extent, with increasing medical student numbers,

coupled with a government drive towards primary care involvement in the care of patients with cancer. Community involvement in oncology teaching could be facilitated by the greater involvement of palliative care physicians and primary care physicians in the teaching.

6.6 Conclusion

The findings of this thesis should be disseminated, with a focus on exposure of medical students to patients with cancer and on the importance of teaching about symptom control. There should be greater community involvement in oncology teaching and a curriculum of core cancer-related competencies for newly qualified doctors should be developed.

Chapter 7. Discussion of the findings and ideas for future research

"The future belongs to those who prepare for it today."

Malcolm X, US black nationalist leader 1925 – 1965

Summary

In this discussion chapter, I have summarised my findings, and discussed the implications both for the oncology community and for undergraduate medical educators. Further research is needed to describe the barriers to patient involvement in undergraduate medical education, and on methods for integrating oncology teaching reliably and successfully into modern medical curricula. Preparedness is an important outcome of undergraduate medical education, and hence monitoring should continue.

7.1 Introduction

Previous authors have identified problems with undergraduate oncology teaching [73]. We have taken a novel approach to studying oncology education, by starting from the premise that the aim of the teaching should be to prepare newly qualified doctors for caring for patients with cancer. The findings described in this thesis have affirmed the importance of oncology teaching in preparedness for practice. In this discussion chapter I summarise the findings, discuss the implications for oncologists and medical educators, and suggest how the findings may inform future research.

The thesis purports to be about teaching medical students about cancer. Because I am an oncologist, my focus is on systemic treatments rather than on, for example, surgical aspects of cancer care. It seems likely that this bias affected my line of questioning during the interviews, the PRHOs' reaction to me, my interpretation of the interview results, my selection of questions for the questionnaire, and my selection of experts for the Delphi technique. I do not believe this bias threatens the validity of the results, but I have tried to interpret the results with this potential bias in mind.

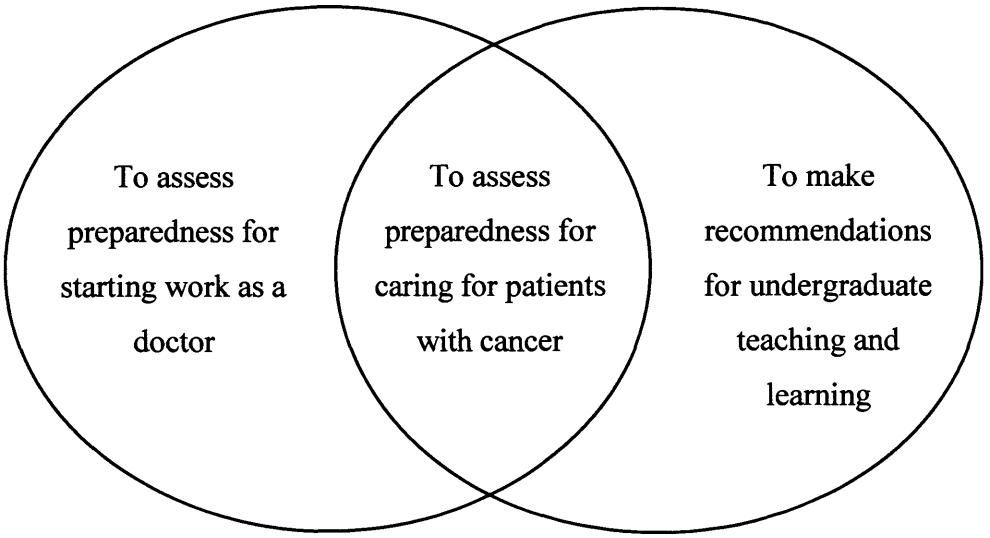
7.2 Statement of principal findings

The aims of this thesis were to study junior doctors' preparedness for caring for patients with cancer, and to investigate how such preparedness related to the oncology teaching they received as undergraduates. This inherently involved studying preparedness for care of all patients by junior doctors (Figure 58 overleaf). I aimed to design the studies so that the results would be relevant both to undergraduate oncology education and to undergraduate medical education in general.

7.2.1 Preparedness for starting work as a doctor

PRHOs felt better prepared in 2005 than they did in 2000/1. The improvement is partly due to course changes, in particular those implemented because of the publication of the GMC document *'Tomorrow's Doctors'*. A higher level of preparedness is correlated with having had teaching that is perceived as relevant to the PRHO year, and also with feeling well supported at work.

Figure 58 Reproduction of the outline of the thesis aims



7.2.2 Preparedness for the care of patients with cancer

PRHOs feel relatively well prepared for recognising and diagnosing cancer and for communicating with patients with cancer. They do not feel so well prepared for dealing with oncological emergencies and for prescribing analgesia. They feel their knowledge about chemotherapy and radiotherapy is inadequate.

7.2.3 Undergraduate teaching and learning in oncology

Meeting patients with cancer at medical school helps to prepare students for caring for patients with cancer. The published literature supports active involvement of patients in teaching and learning. Teaching which is relevant to the PRHO year is helpful in preparing students for starting work. PRHOs think that the most important things to teach medical students about cancer are symptom control and communication skills.

Oncology teaching varies significantly by medical school, with related variability in the graduates' preparedness for caring for patients with cancer.

A group of experts concluded that the most important findings of the studies presented in this thesis were the high questionnaire response rate, the need for greater involvement

of patients in oncology teaching, the need for more supportive care teaching, and the need to help undergraduate students see the relevance of communication skills teaching. They recommended that a core cancer curriculum for newly qualified doctors be developed. They also recommended increased community involvement in oncology teaching.

7.3 The implications of the findings for oncology teachers

This section is central to answering the key question for this thesis: i.e. what can oncologists do to help ensure that students are properly prepared for their first year of work as doctors and that all medical graduates have an adequate grounding so they are competent to care for the patients with cancer they will encounter in their working lives? This question needs to be answered in the context of the wider medical curriculum, the knowledge that not all oncology teaching is done by oncologists, and the findings discussed in Chapter 6.

We can start by summarising the information gained from the data, and reiterating the suggestions made by during the Delphi consultation by stakeholders. We know that students value their oncology teaching highly, especially the teaching of relevant and transferable skills such as communication and symptom control. We know that patient involvement is key to the success of oncology teaching as measured by this thesis (i.e. from the point of view of newly qualified doctors). We also know that levels of patient exposure are currently low. The Delphi group agreed that oncology teachers should encourage students to see communication skills as relevant to real life as a doctor, thrash out a cancer curriculum, teach more on symptom control, recruit teachers from isolated/community settings, and increase students' exposure to patients with cancer. The suggestion that oncology should be taught throughout medical school (as a vertical spine) was controversial.

In this section, I will consider five key questions that arise from these facts and recommendations.

7.3.1 How can we improve patient involvement in oncology teaching?

The value of patient exposure has been discussed in the literature [227], although previous authors have failed to demonstrate any correlation between patient exposure and outcomes such as exam results [228]. Our study has provided evidence of a link between patient exposure and preparedness in oncology. Previous research has focussed on structured or formalised patient exposure (for example the 'Standardised Clinical Instruction Module' [99;229]). Our findings suggest that meeting patients with cancer is beneficial even if the encounters are not structured. We also found qualitative evidence to suggest that 'connecting' or identifying with patients is an important experience for medical students and junior doctors. There is already evidence to support portfolio learning in cancer, with students allocated 'their own' patient with cancer to follow up for nine months [88]. Oncology teachers should increase patient involvement in teaching, and try to facilitate 'connections' between students and patients. They should also encourage medical schools to reward students for behaviour that facilitates meeting patients.

Exposure to patients helps to prepare students, however we have shown that 30% of PRHOs recalled meeting fewer than 10 patients with cancer at medical school. The respondents did not report that they had been kept away from patients with cancer specifically, so there may be a more general problem with exposure to patients during medical training: students' clinical exposure (i.e. to patients) has been described as declining since 1981, probably because of changes in the provision of health care in the UK [230;231]. Low reported exposure to patients with cancer may also be explained by the way students categorise patients. For example, in the interview study there was evidence that some PRHOs referred to patients with cancer as having *'good signs'* or *'brilliant livers'*. Students may remember the 'brilliant liver' but not the underlying diagnosis. Oncologists can help this both by increasing the involvement of real patients in teaching, and by emphasising the holistic nature of cancer care.

7.3.2 How can we focus on teaching transferable skills?

The newly qualified doctors we surveyed valued the transferable skills of communication and symptom control. Previous authors, as discussed in section 5.8.3.3 page 201, have identified a lack of emphasis on palliative care teaching at an

undergraduate level, and we have been able to show that symptom control is the element of palliative care training that new doctors value most. There should be more emphasis on undergraduate learning about symptom control, and stronger links between oncology and palliative care teaching.

It is the responsibility of the oncology community* to tackle this ongoing problem, for example by fostering cooperation between oncology and palliative care teachers and recruiting teachers from hospices and primary care. We have recently done this successfully at the RFUCMS. Palliative care physicians were involved in re-designing the oncology module, and are actively involved in the teaching. All students visit a hospice, and most go on home visits during their attachment. This module is in its infancy, but so far informal student feedback has been positive.

7.3.3 Is a two week attachment the only solution?

The UICC consensus statement focussed on the need for a compulsory oncology attachment (see section 5.8.3.2 page 201), and many of the evidence based oncology teaching interventions reviewed in Chapter 2 described oncology attachments. However, we have demonstrated that a significant minority of medical students are 'missing out' on their oncology attachment. There may be alternative ways of integrating oncology into modern systems based or problem based curricula.

The Delphi group suggested the possibility of a vertical 'cancer spine' running through the curriculum. This suggestion caused controversy. The primary objections were: that all specialties want their subjects to be a vertical spines but cancer is no different (from the educationalists); and that cancer teaching should not be handed over to non-specialists (from the oncologists). I believe both of these perceived objections can be challenged.

To the educationalists, I would of course agree that every medical school is full of groups of teachers protesting the importance of their own subject. The reason oncology

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* By which I include the oncology community in the widest sense: medical and surgical doctors who specialise in cancer; clinical nurse specialists; health professionals allied to medicine; and palliative care specialists.

is different is that 1 in 3 people in the UK will develop cancer during their lifetime, but we have established a body of evidence showing that oncology training is worryingly deficient. Leaving out oncology is analogous to leaving out cardiology, but because cancer does not have its 'own organ', the case is for oncology is harder to argue.

To the oncologists, I would say that we must not lose sight of the primary objective, which is to improve patient care. Currently many students are receiving their only oncology teaching from non-specialists. It may be better for oncologists to co-operate with other medical teachers as described in section 7.3.2 above to ensure all students are taught the necessary transferable skills for cancer care, and then to concentrate their efforts on securing the teaching of specialist knowledge. Teaching about oncology specific knowledge such as cancer treatments and the management of oncological emergencies should not be abandoned. Oncologists can help by delivering the teaching in such a way that it will be relevant to real life as a doctor. Since this kind of specialist knowledge changes quickly, oncologists can also help by making it more available to junior doctors, for example by contributing to internet based reference material (e.g. www.cancerbackup.org.uk/).

7.3.4 Do we need a core curriculum in oncology?

The European Society for Medical Oncology (ESMO) sponsored a task force to examine the state of medical oncology throughout Europe. The task force identified Europe-wide discrepancies in oncology education, and called for a core curriculum in oncology [225]. The Delphi technique described in Chapter 6 also generated a call for a core curriculum. Successful cancer curricula, such as the Australian Cancer Society's 'Ideal oncology curriculum', have been based on consensus, not research evidence [226]. Any core cancer curriculum for the UK would also need to be a consensus document, discussed with undergraduate medical educators from various disciplines including surgery, medicine, oncology, palliative care and communication skills. Although there is a Europe-wide forum for the discussion of undergraduate oncology education (The European Association for Cancer Education) there is currently no such forum in the UK. This may be related to the fact that the oncology community undervalues educational research, as established in Chapter 2. In the future, it may be possible to create a forum for the discussion of undergraduate oncology education, and therefore

facilitate the definition of the core cancer-related competencies for foundation year doctors. There are fora for the discussion of postgraduate education in clinical and medical oncology, and these might form the basis of a group with wider membership and an undergraduate remit.

7.4 The wider implications of the findings for medical educators

The data generated by this thesis have implications for undergraduate medical educators outside the field of oncology. The findings have reaffirmed the importance of clinical exposure during medical training, demonstrated the success of educational reform in improving preparedness, and flagged up the importance of communication skills teaching.

7.4.1 Preparedness and educational reform

We have concluded that at least some of the improvements in preparedness can be attributed to the changes that were implemented by medical schools in response to the publication of *Tomorrows' Doctors* [3]. Our respondents agreed with two of the main recommendations in *Tomorrows' Doctors*, which are that *"information should be kept to a minimum"* (avoiding unnecessary details), and that "*the curriculum must stress the importance of communication skills*" [3]. This reflects that fact that *Tomorrows' Doctors*, as a policy document, is central to the changes that have occurred in medical training over the past decade.

The fact that educational reform has had a measurable effect on preparedness is encouraging and indicates that medical schools have given increasing recognition to the importance of preparing doctors for their first year of practice. However there is cause for some continuing professional concern because despite these improvements because in 2005 the percentage of PRHOs who agreed or strongly agreed that they had been well prepared was still only 59% and there remained striking variation between the responses of doctors from different medical schools. This may not be so much a concern for the individual medical schools as for newly qualified doctors themselves. For medical schools, producing graduates who feel well prepared is only one of several important outcomes, and the relationship between preparedness and 'good' training is nebulous: there are as many attributes of a good medical school as there are of a good doctor, and

the GMC welcomes diversity in medical training. For individual doctors though, lack of preparedness may be a problem. In 2005, a working party of the Royal College of Physicians published a report on medical professionalism 'in a changing world'[20]. The working party concluded that medical professionalism should be redefined, in light of the recent changes in the provision of health care, as *'a set of values, behaviours, and relationships that underpins the trust the public has in doctors'* [20]. Doctors who say *'I feel unprepared'* could be interpreted as saying that they feel unable to trust themselves to do their job properly. Medical trainers should continue to do their best to ensure that young doctors are not put in situations that potentially challenge their professionalism.

7.4.2 Communication skills teaching and learning

Communication skills were a dominant theme throughout this research. Communication skills were an important part of PRHOs working lives, but despite this they did not want more training about communication (Figure 38 page 156). Previous authors have identified a lack of enthusiasm about communication skills teaching, and have suggested two possible explanations. Firstly, that training about communication in UK medical schools is sufficient or even excessive [49], and secondly that training about communication, however good, cannot prepare junior doctors for the emotional involvement they have with patients when they start work [232].

We found that PRHOs felt relatively unprepared for answering patients' questions, compared to other aspects of communication, for example breaking bad news (Figure 50 page 178). This may imply that junior doctors struggle with communication because they lack knowledge, suggesting a need for greater integration between communication skills training and clinical training. We also found that students are not meeting enough patients and hence may not be learning empathy and patient centredeness. These findings have implications for the teaching of communication skills in all UK medical schools.

7.5 Directions for future research

Many questions about oncology teaching and preparedness for practice remain unanswered. Potentially the most important question is: what will oncology teachers think about the findings of this thesis, and will it change their teaching practice? In this

section, I discuss future research ideas covering three broad topics: barriers to patient involvement in teaching; the integration of oncology teaching into the curriculum; and the importance (or otherwise) of preparedness as an outcome of medical training.

7.5.1 The barriers to patient involvement in oncology teaching

Patient involvement has been an important theme throughout this thesis as shown in the literature review, the interview studies, the questionnaire, and the Delphi technique. We have gathered evidence that students are not meeting sufficient numbers of patients with cancer at medical school, and that students may 'depersonalise' patients with cancer. Further research is needed to address these related problems.

Evidence shows patient involvement in teaching facilitates learning [227], that patients are keen to participate in teaching [233], even in deprived areas [234], and that for patients with mental illness involvement can be therapeutic [235]. The barriers to patient involvement in teaching have not been clearly identified. Studies have suggested that the high ratio of medical students to people in some areas of the country may reduce clinical exposure [230], and that patients in obstetrics, gynaecology and genito-urinary medicine clinics are concerned about privacy and quality of care [236;237]. There may be oncology-specific barriers at the population level, the medical school level, the patient level and the student level, which could be researched further, as follows:

- **The population level.** It would be interesting to analyse the results of our questionnaire in conjunction with cancer prevalence statistics, to investigate whether the ratio of students to cancer patients within each medical school region affects the number of patients seen (method suggested by personal communication from Chris McManus).
- **The medical school level.** Qualitative case studies of the medical schools with the highest and lowest levels of patient exposure could be carried out, including performing interviews with the oncology teaching co-ordinators, and the deans for the curriculum, and analysis of timetables, curricula, and student assessments.
- **The patient level.** A questionnaire survey of patients with cancer could be undertaken if ethical approval were obtained, asking about their involvement in teaching, any concerns they have about this, and any factors that may encourage their involvement.

- **The student level.** A study could be designed aimed at investigating the relationship between students' beliefs about useful learning experiences and their behaviour in seeking out meetings with patients. The methods would include asking students to keep diaries of how much time they spent in seminars, bedside teaching, the library, and talking to patients on the wards, as well as a questionnaire about learning beliefs and study styles.

7.5.2 How can we integrate oncology into modern medical curricula?

Finlay *et al* have published their work on using portfolio learning to deliver the oncology curriculum[134], and it seems likely that other medical schools have equally successful and innovative solutions to the problem of integrating oncology into modern medical training. It would be helpful to perform a study to investigate what these solutions are, and how successful they are as alternatives to a two-week oncology attachment.

Case studies of a number of medical schools with different solutions would be a suitable method for such a study. The study would be most interesting if it were international, although this may be challenging in practical terms. It would be necessary to use a number of different outcome measures, some qualitative and some quantitative. Qualitative methods could be used to describe the oncology teaching at different schools, but quantitative methods could be used to survey satisfaction in both teachers and graduates. In the future if there existed an internationally agreed oncology assessment for medical graduates, as suggested by Barton *et al* in their Lancet Oncology personal view[78], this could be used as a research tool.

An alternative strategy would be to implement and evaluate a vertical cancer spine. If designing such a spine, I would describe it as a helix: a twin spiral of oncology and palliative care. The transferable skills (see section 7.3.2 page 232) would form the vertical strands, and the vertical strands would have horizontal 'anchors' consisting of specialist oncology knowledge skills and attitudes. These anchors could form part of attachments to surgery, general medicine, or primary care. Oncologists could be involved in the curriculum design for the anchor sections, in the student assessment, and in either teaching or supporting the teachers according to availability and local practice.

7.5.3 Is preparedness an important and useful outcome to measure?

Throughout this thesis, the assumption has been maintained that preparedness for practice is an important endpoint of undergraduate medical education. It is currently accepted by educationalists that medical training can (and should) be judged by outcomes. For example, do students come out at the other end able to *'practise good standards of clinical care'*? (from *Tomorrows' Doctors*[3]). Some educationalists are of the view that an outcomes based approach to medical training is over simplistic: Geoff Norman, wrote *'It's a bit like developing a new car, where the specifications are that it should have four wheels, an engine, a transmission, brakes, windows, seats, and a gas tank'* [238]. The success of the outcomes-based approach to medical education may depend upon analysing the most appropriate outcomes. A 2003 editorial in Medical Education states that the outcome of undergraduate medical education should be happy, enthusiastic doctors, and concludes, *'The most important outcome measure for both undergraduate and postgraduate medical education may still be an improvement in career retention rates'* [239]. The lack of preparedness in UK graduates, which was identified as a problem at the start of this study, is being addressed. Preparedness for practice should continue to be monitored both because it has been identified by the GMC as an important outcome of undergraduate medical education, and because lack of preparedness is distressing for junior doctors [40].

In the future, studies of preparedness may benefit from the following considerations. Although subjective measures have obvious face validity, the relationships between preparedness, confidence and competence, are complex as discussed in Chapter 1. When junior doctors say they feel prepared, they do not mean they think they are competent, as in the example of communication skills discussed in section 4.4.1 page 128. Instead, preparedness may be highly correlated with self-efficacy, which is a context-specific variable and therefore difficult to measure. It may be possible to explore the relationship between preparedness and self-efficacy, and look at temporal changes in preparedness, but the resultant data may not change teaching practice. Studies to measure competence in junior doctors may be more relevant to teaching practice, and are likely to become more feasible with the introduction of work-based

assessments for newly qualified doctors by the organisation Modernising Medical Careers.

7.6 Conclusion

This is the largest study of its kind that has been undertaken in the UK, and involved a range of health care professionals. There was a strong consensus in key areas, which have important implications for the teaching of medical students. Oncology educators should maintain or where possible increase involvement in undergraduate teaching. Students should be encouraged to talk to and meet more patients with cancer. There should be a greater emphasis on teaching about oncological emergencies and palliative care, and oncologists should contribute to the teaching of oncology specialist information. There should be greater cooperation between the teaching of oncology and of palliative care. Oncologists should consider integrating communication skills into their teaching. The UK oncology community should be encouraged to develop a forum for discussing undergraduate education and for developing a consensus oncology curriculum.

Medical educationalists should continue to monitor preparedness as an important outcome of undergraduate medical education. Communication skills teachers should consider the overlap between communication skills and knowledge, and the importance of teaching students to develop empathy with patients. This may necessitate greater involvement of patients in communication skills teaching.

Future research should focus on the barriers to patient involvement in undergraduate teaching, and on methods for integrating oncology teaching reliably and successfully into modern medical curricula, for example the use of a vertical cancer spine.

Appendix 2.1 Consent form for PRHOs

	Please initial box
• I confirm that I have read and understand the information sheet dated ..... for the above study and have had the opportunity to ask questions.	☐
• I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.	☐
• I consent to the storage, including electronic, of notes, tapes or transcripts of the interview for the purposes of this study. I understand that tapes will be destroyed once they have been transcribed, and the transcriptions will not be identifiable to me by name. No personal information will be included in the study report or other publication.	☐
• I agree to take part in the study.	☐

_____	_____	_____
Name of Interviewee	Date	Signature
_____	_____	_____
Name of researcher	Date	Signature

Appendix 2.2 Letter to postgraduate deans

Dear [name of postgraduate dean],

I am writing to you concerning phase one of a national research project, funded by Cancer Research UK and approved by MREC. I would like to ask for your permission to approach and interview 6 pre-registration house officers who graduated from [name of medical school] in 2004. The project is based at the Royal Free and University College Medical School, and supervised by Dr Alison Jones and Professor Jane Dacre.

A recent survey of British pre-registration house officers found that 41% disagreed with the statement "My experience at medical school has prepared me well for the jobs I have undertaken so far" (Goldacre et al, BMJ 2003). The aim of this project is to find out why these junior doctors feel unprepared, and the first phase of the study will involve conducting interviews with 6 volunteer Pre Registration House Officers from 5 representative medical schools (including [name of medical school]). The interviews will take 15-20 minutes, and will be conducted at a time and a place suitable to the house officer. They will be asked about their experience so far in caring for patients with cancer, and how well prepared they felt.

If you agree in principle to me approaching 6 of your PRHOs and asking them for an interview, then please let me know how you would prefer me to approach them. This could be done directly (via their workplace addresses), via their educational supervisors, or via the postgraduate education centres. Alternatively an email could be sent out to all PRHOs, asking for volunteers to participate in the study.

Please feel free to ask for any additional information you require. I am enclosing copies of the full study protocol, the information sheet for the PRHOs, the consent form I'll ask them to sign, the questions I'll be asking them, and the ethics committee approval letter.

Thanks very much for your time,

Yours sincerely

Dr Judith Gaffan

Enc: Protocol, ethics letter, information sheet, consent form, interview schedule.

Appendix 2.3 Information sheet for PRHOs

What is the purpose of the study?

In a recent survey of Pre Registration House Officers, 41% of the respondents felt that medical school had not prepared them well for the jobs they were expected to do as a house officer[1]. We are investigating how house officers feel unprepared, and aiming to prepare them better. We are concentrating on the care of patients with cancer. The ultimate aim is to improve medical care for patients with cancer.

Do I have to take part?

No. Participation is voluntary, and you will be free to withdraw at any time, if you choose to.

Why have I been chosen?

You have been chosen at random.

What will I have to do?

You will be asked to participate in a 15-20 minute interview, during which you will be asked questions about the patients with cancer you have looked after since starting your job. The interviewer will come and meet you at a convenient time and place. If you agree, the interview will be taped. The tapes will be destroyed once the interview has been transcribed, and the transcription will not have your name on it.

You will be asked about how well prepared you felt for the things you were expected to do. You will also be asked whether you mind us contacting one of your consultants, to ask them how well prepared they think you were for working as their house officer. We would ideally like to correlate the information from you with the information from you consultant. However, if you don't want us to contact your consultant (or your consultant does not want to be interviewed) then we are still interested in what you have to say, and the interview with you can still be used in the study.

Will the information I give be confidential?

Yes. The information will only be stored and used in an anonymised fashion. Any comments you make about your place of work or study will be kept strictly confidential.

What are the benefits of taking part?

We are very interested in your opinion. Medical education is going through a lot of changes, and it is essential that we monitor what we are doing and try to improve things. Especially in the light of the study that shows that medical students do not feel well prepared.

Who is organising the study?

The study is being organised by University College London

Thank-you for considering taking part in the study. If you have any questions please contact Dr Judith Gaffan on 0207 288 3371 j.gaffan@medsch.ucl.ac.uk

1. Goldacre MJ, Lambert T, Evans J and Turner G. Pre-registration house officers' views on whether their experience at medical school prepared them well for their jobs: national questionnaire survey. BMJ, 2003, 326, 1011-2.

Appendix 2.4 Information sheet for consultants

What is the purpose of the study?

In a recent survey of Pre Registration House Officers, 41% of the respondents felt that medical school had not prepared them well for the jobs they were expected to do as a house officer[1]. We are investigating how house officers feel unprepared in the specific area of caring for patients with cancer. The ultimate aim is for medical schools to produce house officers who are better prepared, and hence for patient care to improve.

We are interested in the opinions of consultants because we want to compare how prepared house officers think they are, and how prepared you think they are.

Do I have to take part?

No. Participation is voluntary, and you will be free to withdraw at any time, if you choose to.

Why have I been chosen?

We chose your Pre Registration House Officer at random, and then they recommended you.

What will I have to do?

You will participate in a 15-20 minute interview, during which you will be asked questions about patients with cancer on your firm, and how well you think your Pre Registration House Officer cared for them. The interviewer will come and meet you at a convenient time and place, and the same interviewer will already have interviewed your house officer.

If you agree, the interview will be taped. The tapes will be destroyed once the interview has been transcribed, and the transcription will not have your name on it.

Will the information I give be confidential?

Yes. The information will only be stored and used in an anonymised fashion. Any comments you make will be kept strictly confidential.

What are the benefits of taking part?

The eventual aim is that house officers who come to your firm will be better prepared for the tasks which are expected of them. We are very interested in your opinion, because medical education is going through a lot of changes, and it is essential that we monitor what we are doing and try to improve things. Especially in the light of the study that shows that medical students do not feel well prepared.

Who is organising the study?

The study is being organised by University College London

Thank-you for considering taking part in the study. If you have any questions please contact Dr Judith Gaffan on

Goldacre MJ, Lambert T, Evans J and Turner G. Pre-registration house officers' views on whether their experience at medical school

Appendix 2.5 Abbreviated personality inventory

Personality trait	Questions
Agreeableness	I try to be courteous to everyone I meet
	Some people think of me as cold and calculating
	I generally try to be thoughtful and considerate
Conscientiousness	I'm pretty good about pacing myself so as to get things done on time
	I never seem to be able to get organised
	I strive for excellence in everything that I do
Extraversion	I really enjoy talking to people
	I like to be where the action is
	I often feel as if I'm bursting with energy
Neuroticism	When I'm under a great deal of stress, sometimes I feel like I'm going to pieces
	I often feel tense and jittery
	I often get angry at the way people treat me
Openness	I am intrigued by the patterns I find in art and nature
	I have little interest in speculating on the nature of the universe or the human condition
	I often enjoy playing with theories or abstract ideas

Appendix 2.6 Power calculation

If 1,000 students are surveyed from 29 medical schools (average 35 students per school), then the variance between schools will be a combination of the true between school variance (σ_B^2) and the within school/between student variance (σ_W^2). The apparent variance between schools will be ($\sigma_B^2 + \sigma_W^2/n$) where n=35. Assuming $\sigma_W^2 = 1$ and $\sigma_B^2 = 0.5$, the apparent variance would be 0.28. If we divide the schools equally (14.5 schools in each group) according to a characteristic of the school (e.g. PBL curriculum), it will be possible to detect a difference of 0.6 points with over 90% power at the 5% significance level.

Performed by Dr Richard Morris

Appendix 2.7 Covering letter with the questionnaire

Dear Doctor,

Please complete this questionnaire. It relates to your opinions about the undergraduate training you received in oncology, and your experiences over the last 9 months looking after patients with cancer. **All respondents will be entered into a draw to win an iPOD (or equivalent value in gift vouchers of your choice).**

The aim of the questionnaire is to improve the quality of education about cancer for future medical students, and to make sure house officers are as well prepared as possible. The questionnaire is part of an MD research project, and is funded by Cancer Research UK.

The questionnaire is confidential, and none of the results will be attributed to you personally. If you fill in and return the questionnaire, we will assume you consent to us analysing and using the data. There is a sheet inside the questionnaire for you to put your name on so we can enter you into the prize draw. The sheet with your name on it will be separated from the questionnaire as soon as it arrives back here, and therefore your answers will not be identifiable to you.

The questionnaire takes around 10 minutes to complete. Please return the completed questionnaire to the Postgraduate Centre staff.

Thank you very much for your time.

Dr Judith Gaffan

Clinical Research Training Fellow in Medical Education

Appendix 2.8 Separate response sheet for the prize draw

Yes! Please enter me into the prize draw.

My name is.....

(block capitals please)

If I win, I can be contacted by

on.....

My choice of prize is

a) iPOD ☐

b) £200 gift vouchers ☐

(We'll contact you to ask what type you'd like)

Appendix 2.9 Correspondence with the GMC

Date: 10 Jan 2005

From: Judith Gaffan

To: The initial enquiries team at the GMC (following a telephone conversation)

Dear Sir/Madam,

I am writing to enquire about the possibility of using your registration database for research purposes. I wonder if this letter could be passed on to the appropriate team.

The data would be used to send a questionnaire to the 2004/5 pre-registration house officers. The questionnaire forms part of a study of oncology training, which has been funded by Cancer Research UK. I would like to use Pre Registration House Officer's home addresses as a back-up method of contacting them if it is not possible to contact them at work.

The ethics application for this questionnaire is awaiting consideration by MREC. I would be grateful for your advice about whether you would consider releasing the database of Pre Registration House Officers names and addresses for the purposes of this survey, if ethical approval is granted.

With many thanks,

Yours sincerely,

Dr Judith Gaffan

CRUK Clinical Research Training Fellow in Psychosocial Oncology and Medical Education

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Date: 24 Feb 2005

From: Judith Gaffan

To: Publications officer, GMC

Dear [Name],

Further to our telephone conversation, I am writing to enquire about using the data from the GMC register for research purposes.

The planned research is a questionnaire survey of Pre Registration House Officers. It is a national study, which is currently in the final stages of approval by COREC. The questionnaire will be 4 pages long, and will ask the House Officers about their opinions on their undergraduate training. The eventual aim of this research is to improve undergraduate training in medicine, and it has been funded by Cancer Research UK. It is being supervised by Professor Jane Dacre.

Ideally I would like to obtain an electronic list of the names and addresses of all current Pre Registration House Officers in the UK. There is funding available if payment is required for this information. I would obviously understand if you want to wait until the ethics approval has been finalised before agreeing to this request. Can I also reassure you that the survey has been discussed with other researchers who send surveys to Pre Registration House Officers, including Michael Goldacre and Chris McManus, to avoid multiple questionnaires per cohort of PRHOs.

Thank-you very much for considering this request,

Best wishes,

Judith

Date: 28 Feb 2005

From: Publications officer, GMC

To: Judith Gaffan

Dear Judith

Apologies for not having replied sooner. I have forwarded this request to the Registration team and will get back to you as soon as i hear from them.

With best wishes

[Name]

Date: 10 Mar 2005

From: Judith Gaffan

To: Publications officer, GMC

Dear [Name],

Further to our telephone conversation today, I was just wondering whether you had any further information about my registration query?

Thanks very much for your help,

Best wishes,

Judith

Date: 16 March 2005

From: Publications officer, GMC

To: Judith Gaffan

Dear Judith

I have asked the registration team for advice on this. If you would like their number, it is 0845 357 3456.

Apologies for the delay.

With best wishes

[Name]

Date: 24 Mar 2005

From: Team leader, registrations & education directorate, GMC

To: Judith Gaffan

Dear Judith

Please find attached a list of all doctors currently completing their PRHO year. Unfortunately, as the information was obtained under the terms of the Data Protection Act for specific purposes, you will not be able to contact the doctors as this would be a breach of the Act.

We specify the use of the information contained in the register as follows:

We will make your register entries available to any enquirer and as part of the published registers. We publish the medical register on the Internet without address details and

supply register data to the Department of Health, professional, educational and training bodies so they can correct their own information and compile statistics.

I am sorry not to have been of more help on this occasion

Kind regards

[Name]

Date: 31 Mar 2005

From: Information Policy Officer, GMC

To: Judith Gaffan

Dear Judith,

I was asked by Rachel Cull of our Registration section to give you a call regarding the data protection concerns we have for our Register information being used for research purposes. May I apologise for emailing but after reaching your voicemail this morning I thought it better to contact you anyway rather than inconvenience you further by leaving a message for you to ring me back.

When a doctor registers with us, our data collection notice states includes the following:

* the information provided will be used to update, administer and

maintain their registration.

* register entries are available to any enquirer and as part of the

published registers

* we supply register data to the Department of Health, professional,

educational and training bodies so they can correct their own information and compile statistics.

Whilst using personal data for research purposes is not considered incompatible with the purpose for which it was obtained under the Data Protection Act, we are still obliged to comply with the rest of the Act and must ensure that at the time the data is collected, the doctors are made fully aware of what can be done with that data.

Unfortunately, we do not make mention that we may provide data to organisations so that they can contact them directly for their own purpose, which would include research. So if we allowed further use of even the published information we would be in breach of the first Data Protection

principle that we have not processed their personal data fairly.

The caveat that the information we have provided to you must not be further used to contact the individuals is consistent with our Licence agreement when people purchase the full register which allows possession, storage and use of the data for your own private research purposes but any further use is prohibited.

In the past we have been able to assist researchers by offering to carry an enclosure or advertisement in our publication GMC News. However I know that this is currently undergoing redevelopment and I am unsure if we will still be able to provide this as an alternative - perhaps you could discuss this with [the publications officer]?

We are in the process of reviewing our registration data collection notice at the moment in light of the access rights brought in under the Freedom of Information Act and will include discussion regarding research requests accordingly.

If I can be of any further assistance please do not hesitate to contact me either by return email or on

Kind Regards,

[Name]

Appendix 5.1 Letter declining participation in the study

Date: 26 Jan 2005

From: Examinations Secretary, Edinburgh deanery

To: Judith Gaffan

Professor Macpherson (PG Dean) is not keen on the idea of your sending out a further questionnaire to PRHOs as we have our own survey. He will however bring this up at the next PRHO Committee meeting on 31 January.

[name]

Date: 2 Feb 2005

From: Examinations Secretary, Edinburgh deanery

To: Judith Gaffan

As previously mentioned, this was discussed this at the PRHO meeting yesterday afternoon. The meeting agreed that our PRHOs should not be involved in this given that we have our own survey locally.

[name]

Information in support of this thesis

Publications

Cave J, Woolf K, Jones, A, Dacre. Easing the transition from student to doctor: how can medical schools help prepare their graduates for starting work? Medical Teacher, under review.

Woolf K, **Cave J**, McManus C, Dacre J. It gives you an understanding you can't get from any book. The relationship between medical students and doctors personal illness experiences and their performances: a qualitative and quantitative study. BMC Medical Education, in press.

Cave J, Woolf K, Potts HWW, Dacre J, Jones A. The undergraduate oncology curriculum in the UK: how well does it prepare newly qualified doctors to treat patients with cancer? British Journal of Cancer 2007;97(4):472-8

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Gaffan J, Dacre J, Jones A. Teaching Oncology to Undergraduate Medical Students: A literature review. JCO, 2006;24(12):1932-9.

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Abstracts

Cave J, Woolf K, Dacre J & Jones A. Undergraduate Teaching in Oncology; Where are we now, and where are we going? NCRI, Birmingham, UK, October 2006.

Cave J, Davis B, Lee S-M, Jones A. Teaching about lung cancer vs teaching about breathlessness: A randomised controlled trial comparing tumour-based and symptom-based teaching for undergraduate medical students. 31st ESMO congress, Istanbul, September 2006.

Invited seminars and oral presentations

Nov 2007 Centre for Excellence in Teaching and Learning seminar, Liverpool medical school.

July 2007 "Easing the transition from student to doctor; how can medical schools best prepare their graduates for starting work?" Plenary session paper (one of two), Association for the Study of Medical Education, Keele.

June 2007 Millie Haggedorn Lecture, European Cancer Education Conference, Newcastle.

March 2007 Year 5 Committee, Queen Mary's Medical School

July 2006 Oncology departmental meeting, Brighton and Sussex Medical School

Mar 2006 Sylvia Lawler Prize Meeting – A national study of junior doctors; How prepared do they feel for caring for patients with cancer? Royal Society of Medicine Oncology Section.

July 2005 Qualitative study of preparedness in pre-registration house officers, Association for the Study of Medical Education, Newcastle 2005.

Prizes

Nominated for P5 Excellence in Oncology Award

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We are interested in your views about your training at medical school, because we are trying to find the best way to prepare students to be house officers. This questionnaire is about how prepared you felt for looking after patients with cancer, and what could be done to improve on the areas where you felt least prepared.

Your training at medical school

1. Did you do an oncology attachment at medical school? ☐ Yes ☐ No *please tick*

2. Did you do an oncology special study module? ☐ Yes ☐ No *please tick*

3. How many patients with cancer did you talk to as a medical student?
☐ More than 10 ☐ 6-9 ☐ 2-5 ☐ Less than 2 *please tick*

4. How many terminally ill patients with cancer did you talk to as a medical student?
☐ More than 10 ☐ 6-9 ☐ 2-5 ☐ Less than 2 *please tick*

5. Did you visit a hospice during your training?
☐ Yes for 3-7 days ☐ Yes for 1-2 days ☐ Yes for <1 day ☐ No *please tick*

6. Were you a medical student on the same firm as your first house job? ☐ Yes ☐ No *please tick*

7. Did you have the opportunity to shadow a house officer before you started your first job?
☐ Yes ☐ No *please tick*

8. If so how long was the shadowing for? ..... weeks *please state number*

Your feelings about your experiences in general on the wards

9. Please rate the following statements about your time working as a house officer from strongly agree to strongly disagree

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*
My experience at medical school prepared me well for the jobs I have undertaken so far					
As a house officer I found it easy to get help when I needed it					
As a house officer I felt supported by my senior colleagues					
As a house officer I felt supported by the nursing staff					

How prepared did you feel when you first started your house jobs?

10. When you first started work as a PRHO, how prepared were you for looking after patients with cancer? Please rate the following statements from strongly agree to strongly disagree (or no experience):

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*	*No experience*
I felt prepared for looking after patients with cancer						
I felt prepared for treating oncological emergencies (e.g. neutropenic sepsis)						
I felt prepared for breaking bad news						
My medical knowledge was insufficient for looking after patients with cancer						
I felt unprepared for answering the questions patients asked me						
I didn't feel I knew enough about radiotherapy						
I didn't feel I knew enough about chemotherapy						
I felt prepared for talking to patients about their cancer						
When the emphasis of care shifted from curative to palliative I felt less certain of what was expected of me						

11. When you first started work as a PRHO, how prepared were you for diagnosing cancer? Please rate the following statements from strongly agree to strongly disagree (or no experience).

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*	*No experience*
I felt unprepared for recognising and diagnosing cancer						
I felt unprepared for recognising and diagnosing metastatic cancer						
Patients who are being investigated for suspected cancer should be kept informed about their possible diagnosis						
I felt prepared for talking to patients when the possibility of cancer was being investigated						

12. When you first started work as a PRHO, how prepared were you to care for patients with advanced or incurable cancer? Please rate the following statements from strongly agree to strongly disagree (or no experience):

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*	*No experience*
I felt prepared for looking after patients with incurable cancer						
I felt unprepared for answering the questions which patients with incurable cancer asked me						
I felt prepared to talk to terminally ill patients about their cancer						

13. Thinking about prescribing drugs for patients with cancer, please rate the following statements from strongly agree to strongly disagree (or no experience).

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*	*No experience*
When I started as a house officer I didn't feel prepared for prescribing analgesia to patients with cancer						
When I started as a house officer I felt prepared for prescribing syringe drivers for patients with cancer						

Your training at medical school, and how helpful it was in preparing you.

14. Please think about your training at medical school. Please rate the following statements from strongly agree to strongly disagree.

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*
The majority of the teaching we had about cancer treatments was about curative aspects					
The teaching was relevant to real life as a doctor					
Medical students were kept away from patients with cancer					
I learnt a lot about cancer from the patients themselves					
I can't identify any particular doctors who were role models during my training					
The majority of the teaching we had about cancer was about the palliative aspects					
The communication skills teaching we had helped prepare me for looking after patients with cancer					

15. For each of the following, please state whether you received not enough, enough, or too much of this type of teaching to prepare you for your house officer year. Please tick one box for each type of teaching.

	Not enough	*Enough*	*Too much*
Oncology teaching overall			
Teaching about symptom control			
Teaching on radiotherapy and chemotherapy			
Teaching on what to do when the patient can not be cured			
Direct contact with patients with cancer			
Teaching on communication skills			
Direct contact with patients who were terminally ill			
Time spent in a hospice			
Teaching on how to individualise patient treatment			

16. Are there any ways you would change the teaching at medical school to make doctors more prepared for their house jobs?

17. Based on your experience as a house officer, please rank, in order of importance, the 2 aspects of oncology which you think it is most important for medical students to learn?

Most important
Second most important

18. Based on your experience as a house officer, please tell us the one aspect of oncology which you think it is least important for medical students to learn?

Least important

Some questions about you

19. Are you male or female? ☐ Male ☐ Female *please tick*

20. Which country did you train in? ..... *please complete*

21. Which medical school did you go to? ..... *please complete*

22. Did you enter medical school as a graduate? ☐ Yes ☐ No *please tick*

23. What year did you leave medical school? ☐ 2004 ☐ Other ..... *please tick and/or state year*

24. How much do you agree with the way these statements describe you as a person?

	Strongly agree	*Agree*	*Neutral*	*Disagree*	*Strongly disagree*
I try to be courteous to everyone I meet					
I'm pretty good about pacing myself so as to get things done on time					
When I'm under a great deal of stress, sometimes I feel like I'm going to pieces					
I am intrigued by the patterns I find in art and nature					
I really enjoy talking to people					
I often feel tense and jittery					
I like to be where the action is					
I often feel as if I'm bursting with energy					
I often get angry at the way people treat me					
Some people think of me as cold and calculating					
I have little interest in speculating on the nature of the universe or the human condition					
I generally try to be thoughtful and considerate					
I never seem to be able to get organised					
I often enjoy playing with theories or abstract ideas					
I strive for excellence in everything that I do					

Your personal experiences outside your medical training

We would like to ask some questions about your personal experience of cancer. If you find these questions upsetting and would like to talk about it, you can contact Cancer Bacup on 0808 8001234 or www.cancerbacup.org.uk.

25. Have you had a relative or friend who has had cancer? ☐ Yes ☐ No *please tick*

26. Have you had a relative or friend who has had a serious illness other than cancer? ☐ Yes ☐ No *please tick*

27. Have you had a serious illness yourself in your lifetime? ☐ Yes ☐ No *please tick*

28. When thinking of your personal experience of illness please rate the following statements:

	Strongly agree	*Agree*	*Not applicable*	*Disagree*	*Strongly disagree*
I have had personal experiences outside my formal medical training which have helped me learn how to look after patients with cancer					

END OF QUESTIONNAIRE, THANK-YOU!

Thank-you very much for your time. If you have any further questions of comments please feel free to contact Dr Judith Gaffan on 0207 288 3371 or j.gaffan@medsch.ucl.ac.uk

Please answer the following statements with respect to the findings of Dr Cave's study, as presented on 8th June 2006. Please feel free to alter any of the statements, to add statements, and/or to write comments in the boxes at the bottom of each section.

The following interventions should be pursued...	**Please rate your agreement with each statement (1 = disagree completely 10 = agree completely)**
Teach oncology throughout medical school, not as a separate attachment	1 2 3 4 5 6 7 8 9 10
Encourage students to visit community care settings	1 2 3 4 5 6 7 8 9 10
Define the core cancer related competencies for FY1 doctors / thrash out a cancer curriculum	1 2 3 4 5 6 7 8 9 10
Investigate whether students are as good at communication skills as they think they are	1 2 3 4 5 6 7 8 9 10
Do a pilot study looking at teaching symptom control, principles of radio and chemotherapy, oncological emergencies, and communication with patients and families. Involve patients.	1 2 3 4 5 6 7 8 9 10
Repeat the questionnaire in 3 years time.	1 2 3 4 5 6 7 8 9 10
Recruit teaching sites which are isolated from medical schools, e.g. hospices	1 2 3 4 5 6 7 8 9 10
Do an intervention which focuses on students personal experiences of cancer or ill health	1 2 3 4 5 6 7 8 9 10
Please write any comments here	

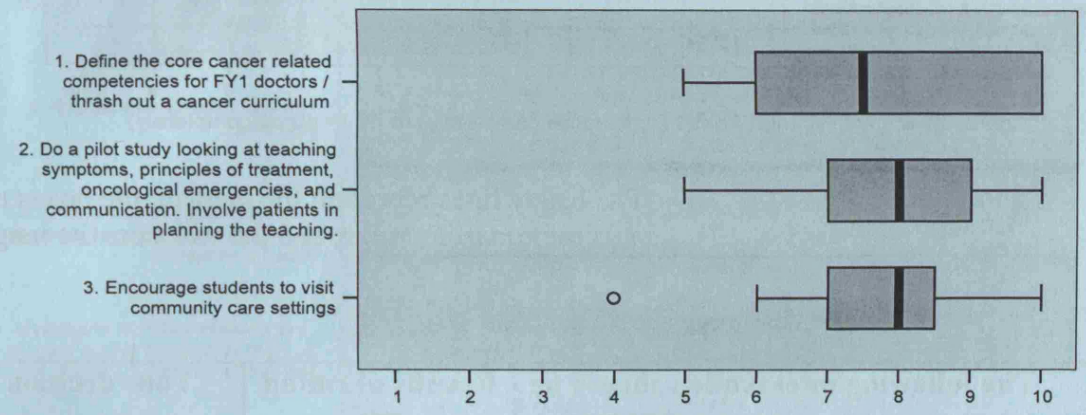
PLEASE TURN OVER

The following interventions should be pursued...	**Please rate your agreement with each statement (1 = disagree completely 10 = agree completely)**
Do a large scale randomised study comparing two methods of teaching oncology	1 2 3 4 5 6 7 8 9 10
Do a randomised controlled trial. In the intervention arm, involve patients and carers in planning the curriculum and the assessment.	1 2 3 4 5 6 7 8 9 10
Do a randomised controlled trial comparing teaching at a hospice with teaching at a hospital	1 2 3 4 5 6 7 8 9 10
Do a randomised controlled trial. In the intervention arm, the teaching is focussed on the clerking of 5 typical or important oncology cases.	1 2 3 4 5 6 7 8 9 10
Please write any comments here	

The most important finding of the study is...	**Please rate your agreement with each statement (1 = disagree completely 10 = agree completely)**
Preparedness has improved	1 2 3 4 5 6 7 8 9 10
Students need to be encouraged to see communication skills as applicable throughout their working lives, and not to put them 'in a box'.	1 2 3 4 5 6 7 8 9 10
Students need more exposure to patients with cancer	1 2 3 4 5 6 7 8 9 10
There should be more teaching on symptom control	1 2 3 4 5 6 7 8 9 10
Teaching about pain control is a priority	1 2 3 4 5 6 7 8 9 10
The response rate was high which indicates that PRHOs think this is an important area	1 2 3 4 5 6 7 8 9 10
Please write any comments here	

THANK-YOU VERY MUCH

1. Interventions: Statements with a consensus agreement

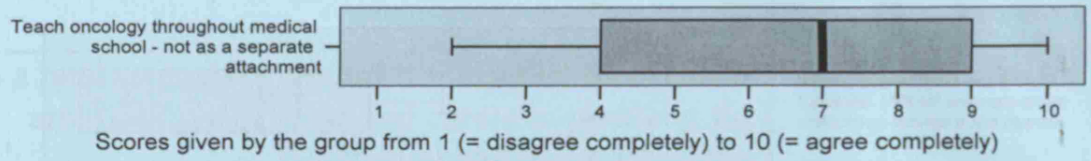


Scores given by the group from 1 (= disagree completely) to 10 (= agree completely)

The heavy lines represent the median value, the boxes are the interquartile range, and the whiskers are the range. The dots are outliers.

The following intervention should be pursued...	**Results of round one**		**Your decision**
	Mode	**Range**	**(please circle one)**
1. Define the core cancer related competencies for FY1 doctors / thrash out a cancer curriculum	10	5-10	**Agree** **Disagree**
Comment			
2. Do a pilot study looking at teaching symptom control, principles of radio and chemotherapy, oncological emergencies, and communication with patients and families. Involve patients in planning the teaching and assessment.	7	5-10	**Agree** **Disagree**
Comment			
3. Encourage students to visit community care settings	7 & 8	4-10	**Agree** **Disagree**
Comment			

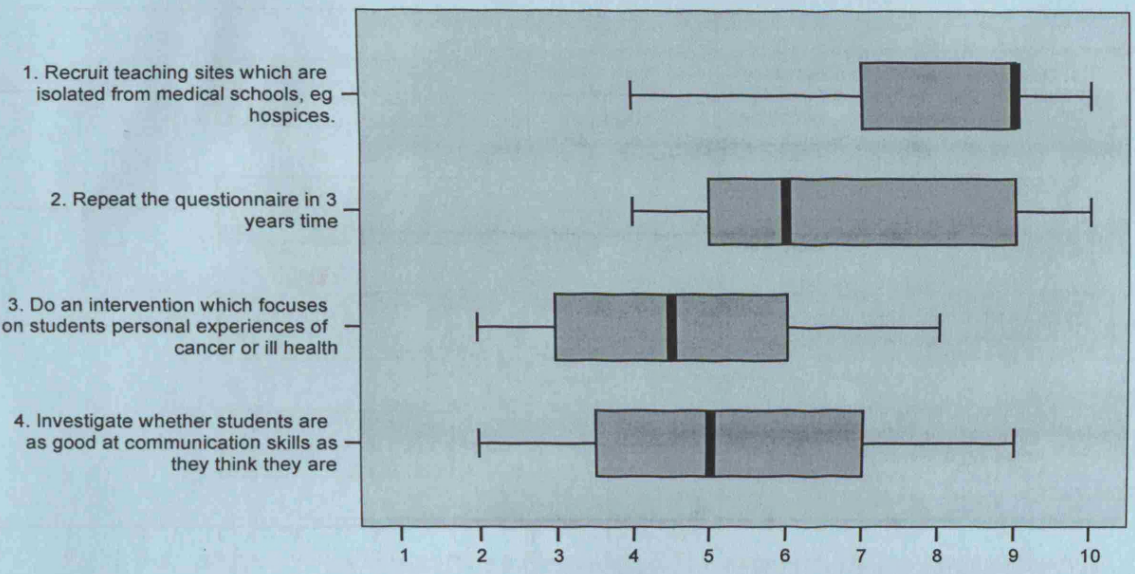
2. Interventions: Controversial statements



The heavy lines represent the median, the boxes the interquartile range, and the whiskers the range.

The following intervention should be pursued...	Results of round one		Your decision
	Mode	Range	(please circle one)
Teach oncology throughout medical school, not as a separate attachment **Note from Jude** - I would like to clarify what I think was meant by this statement: The suggestion is that cancer should become a vertical spine in the curriculum, so that teaching in each module has a clearly defined cancer element.	2& 4& 9& 10	2-10	**Agree** **Disagree**
Comment			

3. Interventions: Controversial statements

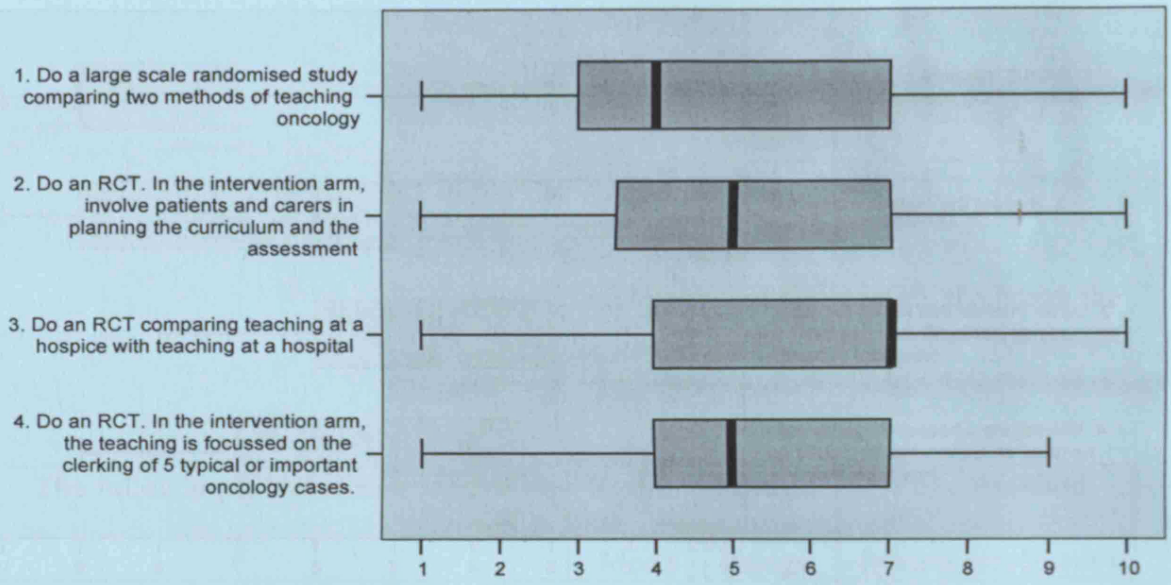


Scores given by the group from 1 (= disagree completely) to 10 (= agree completely)

The heavy lines represent the median, the boxes the interquartile range, and the whiskers the range.

The following intervention should be pursued...	**Results of round one**		**Your decision**
	Mode	**Range**	**(please circle one)**
1. Recruit teaching sites which are isolated from medical schools, e.g. hospices **Note from Jude**: This would be a partnership	9	4-10	**Agree** **Disagree**
Comment			
2. Repeat the questionnaire in 2 or 3 years time.	5&10	4-10	**Agree** **Disagree**
Comment			
3. Do an intervention which focuses on students personal experiences of cancer or ill health	2& 3&6	2-8	**Agree** **Disagree**
Comment			
4. Investigate whether students are as good at communication skills as they think they are	7	2-9	**Agree** **Disagree**
Comment			

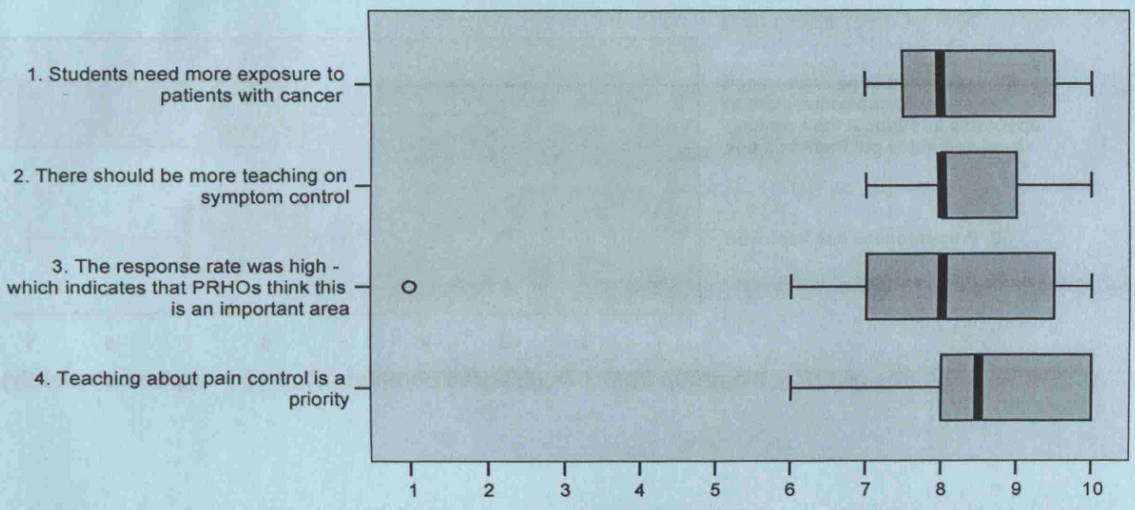
4. Interventions: Statements about RCTs



Scores given by the group from 1 (= disagree completely) to 10 (= agree completely)

The following intervention should be pursued...	**Results of round one**		**Your decision**
	Mode	**Range**	**(please circle one)**
1. Do a large scale randomised study comparing two methods of teaching oncology **Note from Jude** - What I would like to know is are you in favour **in principle** of using RCTs to evaluate teaching interventions? E.g. are they practical?	3	1-10	**Agree** **Disagree**
Comment			
2. Do an RCT. In the intervention arm, involve patients and carers in planning the curriculum and the assessment.	3&5 &7	1-10	**Agree** **Disagree**
Comment			
3. Do an RCT comparing teaching at a hospice with teaching at a hospital	7	1-10	**Agree** **Disagree**
Comment			
4. Do an RCT. In the intervention arm, the teaching is focussed on the clerking of 5 typical or important oncology cases.	4&5 &7	1-9	**Agree** **Disagree**
Comment			

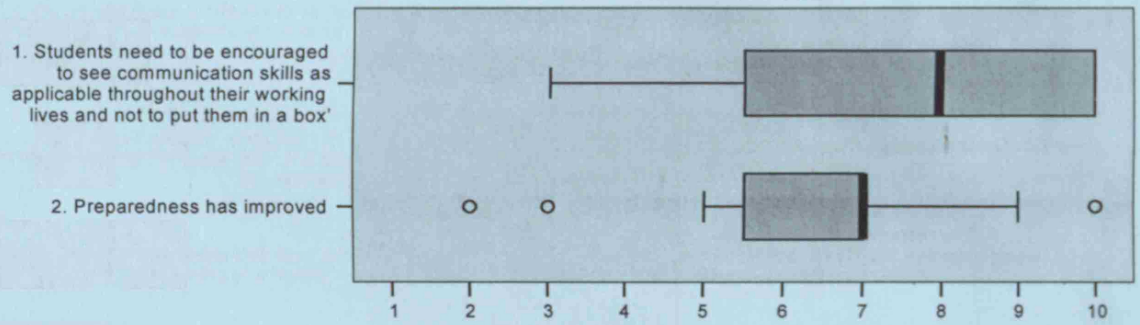
5. Findings: Statements with a consensus agreement



Scores given by the group from 1 (= disagree completely) to 10 (= agree completely)

The most important finding of the study is…	**Results of round one**		**Your decision (please circle one)**
	Mode	**Range**	
1. Students need more exposure to patients with cancer	8	7-10	**Agree** **Disagree**
Comment			
2. There should be more teaching on symptom control	8	7-10	**Agree** **Disagree**
Comment			
3. The response rate was high which indicates that PRHOs think this is an important area	8	1-10	**Agree** **Disagree**
Comment			
4. Teaching about pain control is a priority **Note from Jude**: Some respondents said that there are other priorities too. Should this statement be a key conclusion?	8&10	6-10	**Agree** **Disagree**
Comment			

6. Findings of the study: Controversial statements



Scores given by the group from 1 (= disagree completely) to 10 (= agree completely)

The most important finding of the study is…	Results of round one		Your decision
	Mode	Range	(please circle one)
1. Students need to be encouraged to see communication skills as applicable throughout their working lives, and not to put them 'in a box'.	10	3-10	**Agree** **Disagree**
Comment			
2. Preparedness has improved	7	2-10	**Agree** **Disagree**
Comment			

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